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HOME CANNING & DRYING of Vegetables & Fruits



Published by
National War Garden Commission
Washington, D.C.

WAR DEPARTMENT

WASHINGTON

June 7, 1918.

NATIONAL WAR GARDEN COMMISSION,
WASHINGTON, D. C.

Dear Sirs:

The War Department finds much satisfaction in the creation of War Gardens at various army camps by the Conservation and Reclamation Division of the Quartermaster General's office. Food production at these camps has been the subject of some concern with the department. The large areas of tillable land within many of the military reservations have been regarded as offering potential food production on a large scale, and I feel that the army is to be congratulated that the utilization of this space has now taken concrete form.

Camp War Gardens will serve more than one useful purpose. The production of food at the mess door is of great importance in that it not only lessens the army's demand on the usual sources of supply but eliminates transportation as well.

To the National War Garden Commission I extend the thanks of the Department for its quick response to the appeal of the Quartermaster General's office for co-operation. Not confining itself to mere compliance with the letter of the request, the Commission entered fully into its spirit. At a time when funds were not available through Government channels the Commission voluntarily provided seed, fertilizers and equipment which made possible the establishment of a War Garden of 300 acres or more at Camp Dix. For this generous contribution and for swift action to overcome the handicap of a late start I take pleasure in making this acknowledgment and in expressing the hope that the Camp Dix War Garden of the National War Garden Commission will prove an unqualified success.

Cordially yours,

(Signed) NEWTON D. BAKER,
Secretary of War.

UNITED STATES FOOD ADMINISTRATION

Baltimore, Maryland.
September 14, 1918.

NATIONAL WAR GARDEN COMMISSION,
Maryland Building,
WASHINGTON, D. C.

Gentlemen:

We wish to express to you our appreciation of your helpfulness in our war garden, canning and drying work in Maryland during the season of 1918. Your book on canning and drying has been of great value, while the canning outfits which you so kindly gave us made it possible for us to establish canning centers throughout the State, with results of far-reaching importance which could not have been otherwise accomplished. We are equally appreciative of your prompt and willing response to our request for the services of one of your trained investigators to assist in our war garden work. Your spirit of prompt and willing service is cordially appreciated.

Yours truly,

(Signed) EDWIN G. BAETJER,
Federal Food Administrator for Maryland.

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BACK UP THE CANNON BY USE OF THE CANNER

By CHARLES LATHROP PACK, President

National War Garden Commission

"WE stand with our backs to the wall." That call to the civilized world, made by General Haig in the spring of 1918, has brought and still must bring answer from the women. Only by their co-operation has it been possible for that call to be answered, for no nation can do a great work unless the women of that nation put their influence into the job.

We were forced into a war which was something more than a war to decide policies or mark boundaries—a war involving the most sacred questions with which men and women have to deal—the sanctity of womanhood, the sacredness of childhood and the right to live in freedom. We could not yield these rights while we had the strength to defend them.

In the emergency created by this war the question of food goes hand in hand with thrift. Our position has been no less closely involved in the conflict than that of Europe. In proof of this let me call attention to the plan the enemy had for us. I quote from a book called "War," by Klaus Wagner, published in 1916 in Berlin. On page 165 the author says:

"Not only North America, but the whole of America must become a bulwark of German *Kultur*, perhaps the strongest fortress of the Germanic races. That is every one's hope who frees himself from his own local European pride and who places race feeling above his love for home."

Mark that well—his race feeling above his love for home; and then let me quote one of the thousands of letters received by the National War

Garden Commission. Here it is, from a boy:

"I have decided to help win the war by having a war garden, and I have just read your notice that any one can have a free garden book. Please send it to me. My father joined the army in 1915 and was killed in 1916.—Harvey Cameron, New Glasgow, Nova Scotia."

That boy is typical of the boys and men of many nations who have been fighting against the common enemy. If they could look the job in the face that way, what can we do? Our boys have been giving their lives toward the achievement of victory. Every mile of reclaimed territory in devastated France and Belgium adds hundreds of hungry mouths to be fed. With France and Belgium liberated many more people have become dependent on this country's food supply. In victory we must feed not only more millions abroad but also care for our own people at home and our soldiers until they return. Peace cannot mean an increase of the world's grain supply for another year at least, and it will take several years of bountiful crops to refill the empty bins and granaries of the world.

Victory, therefore, must necessarily bring a large increase in our obligation: We must not only produce food as close to the kitchen door as possible, but we must save a vast volume of this food for winter use. To save it we must can it, dry it, or otherwise prepare to have it in readiness for the months of non-production. Canning and drying, therefore, are as imperative to-day as if the war were just beginning.

TIME-TABLE FOR BLANCHING AND STERILIZING

The following time-table shows blanching time for various vegetables and fruits, and also sterilizing time in the hot-water bath outfit, and in equipment for sterilization by the water-seal method, the steam-pressure method and the aluminum steam-cooker method:

Vegetables	Blanching	Sterilizing			
		Hot-water	Water seal	Steam pressure in lbs.	
				5 to 10	10 to 15
	Minutes	Minutes	Minutes	Minutes	Minutes
Asparagus.....	10 to 15	120	90	60	40
Beets.....	5	90	80	60	40
Brussels sprouts.....	5 to 10	120	90	60	40
Cabbage.....	5 to 10	120	90	60	40
Cauliflower.....	3	60	40	30	20
Carrots.....	5	90	80	60	40
Corn.....	5 to 10	180	120	90	60
Greens.....	15	120	90	60	40
Lima beans.....	5 to 10	180	120	60	40
Okra.....	5 to 10	120	90	60	40
Parsnips.....	5	90	80	60	40
Peppers, sweet or hot.....	5 to 10	120	90	60	40
Peppers, pimentos.....	Roast	35	25	20	15
Peas.....	5 to 10	180	120	60	40
Pumpkin.....	See directions	120	90	60	40
Salsify.....	5	90	80	60	40
Sour-crout.....		120	90	60	40
String beans.....	5 to 10	120	90	60	40
Squash.....	See directions	120	90	60	40
Tomatoes.....	To loosen skins	22	18	15	10
Fruits					
Apples.....	1½	20	12	8	..
Apricots.....	1 to 2	16	12	10	..
Blackberries.....	none	16	12	10	..
Blueberries.....	none	16	12	10	..
Dewberries.....	none	16	12	10	..
Cherries, sweet.....	none	16	12	10	..
Cherries, sour.....	none	16	12	10	..
Currants.....	none	16	12	10	..
Fruit juices.....	See directions
Gooseberries.....	1 to 2	16	12	10	..
Oranges.....	1 to 2	12	8	6	..
Pears.....	1½	20	12	8	..
Peaches.....	To loosen skins	16	12	10	..
Plums.....	none	16	12	10	..
Pineapples.....	3 to 5	30	15	10	..
Quinces.....	1½	20	12	8	..
Raspberries.....	none	16	12	10	..
Rhubarb.....		20	15	15	..
Strawberries.....	none	16	12	10	..
Fruits without sugar.....		30	20	12	..

The time given in this table is for quart jars. Add 30 minutes for 2-quart jars and deduct 5 minutes for pint jars.

The time given is for fresh, sound and firm vegetables. Increase the time of sterilization by adding one-fifth for vegetables which have been gathered over 24 hours.

The time given is for altitudes up to 1000 feet above sea level. For higher altitudes increase the time in hot-water bath 10 per cent for each additional 500 feet. For example, if the time is given as 120 minutes in the table and your location is 1500 feet above sea level, the time should be made 132 minutes.

Neither home-made nor commercial hot-water bath outfits are entirely satisfactory, however, for canning at very high altitudes, as the temperature of water in them does not reach 212 degrees F. In such localities water-seal and steam-pressure outfits are advisable, as they give higher temperatures.

PART I

HOME CANNING MANUAL

To save vegetables and fruits by canning this year is a patriotic duty. War has made the need for Food Conservation more imperative than at any time in history. America is responsible for the food supply of Europe. The American family can do nothing more helpful in this emergency than to Can All Food That Can be Canned. In this way the abundance of the summer may be made to supply the needs of the winter.

CANNING IS FOOD THRIFT

The National War Garden Commission's campaign for five million or more War Gardens has brought about the creation of a vast food supply hitherto greatly neglected. To utilize this to the best advantage calls for Canning operations in every household throughout the nation.

The preservation of foodstuffs by Canning is always effective Food Thrift. It enables

the individual household to take advantage of summer's low prices for vegetables even if no garden has been planted. It effects the saving of a surplus of foodstuffs that would otherwise be wasted through excess of supply over immediate consumption. It eliminates the cold storage cost that must be added to the prices of commodities bought during the winter. Of vital importance, also, is that it relieves the strain on transportation facilities of the country. This phase has been especially emphasized for this year by the unprecedented traffic situation. All this increases the need for Home Canning and proves that this is a national obligation.

CANNING MADE EASY BY MODERN METHODS

By the Single Period Cold-Pack method it is as easy to can vegetables as to can fruits, and this year it is more useful. By the use of this method canning may be done in the kitchen or out of doors. It may be done in the individual household or by groups of families. Community canning is important in that it makes possible the use of the best

equipment at small individual outlay and induces Food Conservation on a large scale. Community canning by school children, under the direction of competent teachers, is especially valuable.

This Manual presents all necessary instructions for canning vegetables and fruits, in a manner which may be so readily understood that the work is no longer a problem,

but is so simple that any adult or child may do it with success.

COMMUNITY WORK

One of the best methods to follow in canning and drying operations is for several families to club together for the work.

The work may be carried on at a schoolhouse, in a vacant store-room, at the home of one of the members or at some other convenient and central location where heat and water can be made available. By joining in the purchase of equipment each participant will be in position to save money as against individual purchases and at the same time have the advantage of larger and more complete equipment. The cost is slight when thus divided and the benefits very great to all concerned.

For a co-operative enterprise it is well to have a committee of from three to five to take charge of all details. First determine how many people will take part in the work, how much each proposes to can or dry, what vegetables and fruits each will furnish and such other information as will have a bearing on the selection of equipment. After deciding how much money will be needed,

COLD-PACK IN THE SOUTH

In some parts of the Southern States there has been complaint as to results obtained in the use of the Single Period Cold-pack method, but inquiry and research have shown that in most cases the trouble arose from lack of care in following instructions or the use of poor rubbers, and was not to be blamed on the method itself. With proper care and perfect cleanliness the results in the South are as good as elsewhere.

have each member contribute his or her proportion, determined by the amount of canning or drying he or she proposes to do.

The equipment should be bought as early as possible to prevent disappointment in

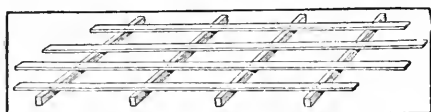


FIG. 1. Home-made rack for wash-boiler.

delivery which is almost certain to follow delay. This equipment may be ordered through a local dealer or direct from the manufacturers. The National War Garden Commission publishes a list of manufacturers which may be had upon application.

The equipment may be used by the individual members on a schedule arranged by the committee, or a working force may be appointed to do all the work, receiving pay in the form of a percentage of the product.

Publicity is important in keeping interest aroused and there should be a committee to arrange with the local papers for the publication of information concerning the enterprise. This serves as an incentive to others.

The National War Garden Commission will send upon application its pamphlet on Community and Neighborhood Canning and Drying, giving details as to organization.

STERILIZATION OF FOOD

The scientist has proved that food decay is caused by microorganisms, classed as bacteria, yeasts and molds. Success in canning neces-

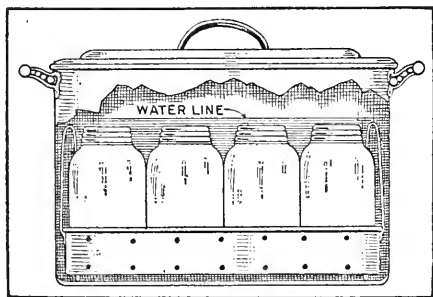


FIG. 2. Wash-boiler with rack for jars.

sitates the destruction of these organisms. A temperature of 160° to 190° F. will kill yeasts and molds. Bacteria are destroyed at a temperature of 212° F. held for the proper length of time. The destruction of these organisms by heat is called sterilization.

METHODS OF CANNING

There are five principal methods of home canning. These are:

1. Single Period Cold-pack Method.

2. Fractional or Intermittent Sterilization Method.

3. Open Kettle or Hot-pack Method.

4. Cold Water Method.

5. Vacuum Seal Method.

The method recommended for home use is the Single Period Cold-pack method. It is much the best because of its simplicity and effectiveness, and in this book detailed instructions are given for its use.

The outlines of the various methods are:

1. *Single Period Cold-pack Method:* The prepared vegetables or fruits are blanched in boiling water or live steam, then quickly cold-dipped and packed at once into hot jars, the contents covered with boiling water or syrup, and the jars partially sealed and sterilized in boiling water or by steam pressure. The jars are then sealed tight, tested for leaks and stored. Full details are given on page 7 and the pages following.

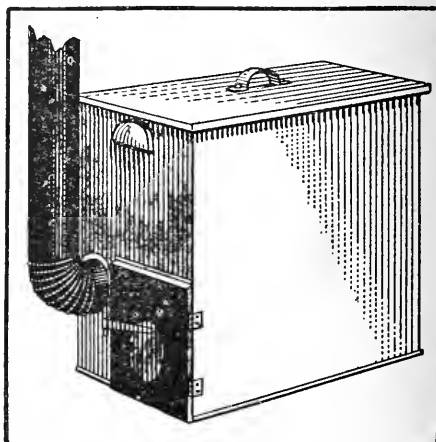


FIG. 3. A type of commercial canner for hot-water bath, using wood, coal, charcoal, chips, cobs, or brush.

2. *Fractional or Intermittent Sterilization Method:* Vegetables are half sealed in jars and sterilized for 1 hour or more on each of three successive days. This method is expensive as to time, labor and fuel and discourages the home canning of vegetables.

3. *Open Kettle or Hot-pack Method:* Vegetables or fruits are cooked in an open kettle and packed in jars. There is always danger of spores and bacteria being introduced on spoons or other utensils while the jars are being filled. This method should never be used in canning vegetables. Even with fruits it is not as desirable as the cold-pack.

4. *Cold-water Method:* Rhubarb, cranberries, gooseberries, and sour cherries, because of their acidity, are often canned by this method. The fruits are washed, put in sterilized jars, cold water is added to overflowing, and the jar is then sealed. This method is not always successful as the acid content varies with ripeness and the locality in which the fruits are grown.

5. *Vacuum Seal Method:* Vegetables are washed, blanched, cold-dipped and cooked as for table use; packed and sealed in especially made vacuum seal jars. The jars must be well made and the work properly done to bring about satisfactory results.

ADVANTAGES OF THE COLD-PACK

The Single Period Cold-pack method is a simple and sure way of canning. It insures a good color, texture and flavor to the vegetable or fruit canned. In using this method sterilization is completed in a single

period, saving time, fuel and labor. The simplicity of the method commends it. Fruits are put up in syrups. Vegetables require only salt for flavoring and water to fill the container.

Another advantage is that it is practicable to put up food in small as well as large quantities. The housewife who understands the process will find

that it pays to put up even a single container. Thus, when she has a small surplus of some garden crop she should take the time necessary to place this food in a container and store it for future use. This is true household efficiency.

COLD-PACK EQUIPMENT

1. *The Homemade Hot-water Bath Outfit.*—A serviceable Single Period Cold-pack canning outfit may be made of equipment found in almost any household. Any utensil large and deep enough to allow an inch of water above jars, and a false bottom beneath them, and having a closely fitting cover, may be used for sterilizing. A wash-boiler, large lard can or new garbage pail serves the purpose when canning is to be done in large quantities. Into this utensil should be placed a wire or wooden rack to hold the jars off the bottom and so constructed as to permit circulation of water underneath the jars.

For lifting glass-top jars use two button-hooks or similar device. For lifting screw-top jars, suitable lifters may be bought for a small sum. A milk carrier makes a good false bottom, and if this is used the jars may be easily lifted out at the end of the sterilization period.

2. *Commercial Hot-water Bath Outfits.*—There are upon the market outfits on the order of the wash-boiler or pail type of homemade canner. These are excellent and are especially desirable if one has considerable quantities of vegetables or fruits to put up. There are also commercial canners conve-

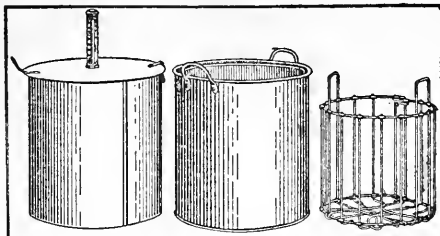


FIG. 5. Water-seal outfit. On the left is shown the cover, with thermometer. In the center is the double walled vat or holder. On the right is a crate for jars.

nient for out-door work, having fire-box and smoke-pipe all in one piece with the sterilizing vat. As with the homemade outfit, containers are immersed in boiling water.

3. *Water Seal Outfits.*—These are desirable, as the period of sterilization is shorter than in the homemade outfit and less fuel is therefore required. The outfit consists of two containers, one fitting within the other, and a cover which extends into the space between the outer and the inner container. The waterjacket makes it possible for the temperature in the inner container to be raised several degrees above 212° F.

4. *Steam Pressure Outfits.*—Canning is very rapid when sterilization is done in steam maintained at a pressure. There are several canners of this type. Each is provided with pressure gauge and safety valve and they carry from

5 to 30 pounds of steam pressure. This type is suitable for home or community canning.

5. *Aluminum Pressure Outfits.*—These cookers are satisfactory for canning and for general cooking. They carry from 5 to 30 pounds of steam pressure. Each outfit is provided with a steam pressure gauge and safety valve.

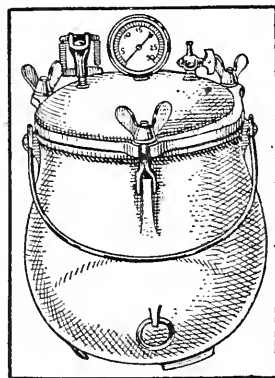


FIG. 6. Aluminum pressure canner.

HIGH ALTITUDES

At high altitudes the boiling point of water is below 212° F. At moderate elevations satisfactory results may be obtained in the use of the hot-water bath by increasing the time of sterilization 10 per cent for every

500 feet above 1000. To insure best results in very high altitudes, however, a steam pressure canner or aluminum pressure cooker is recommended to be used.

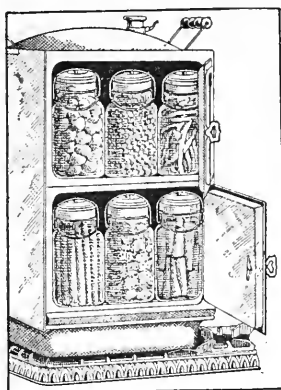


FIG. 7. Home canner and steam cooker holding 14 quart jars. Requires same time as hot-water bath.

OPERATION OF PRESSURE CANNERS AND ALUMINUM COOKERS

1. Have water in the canner up to the false bottom, but not above it. Keep this water boiling during the time that packed jars are being placed in the canner, and add water occasionally to prevent its boiling dry.

2. To prepare product follow instructions in "Steps in the Single Period Cold-pack Method" on pages 8 and 9. As each jar is packed, set it at once, partially sealed, in the canner. The cover of the canner may be put in position, but not clamped.

3. When all of the filled jars are placed in the canner, put on the cover, and fasten opposite clamps moderately tight; then tighten each pair of clamps fully.

4. The petcock should be left open until live steam escapes from it. The canner should be steam-tight, and no steam should escape except through the open petcock. When live steam escapes, close the petcock completely.

5. Begin to count time when the steam gauge registers the required temperature.

6. Maintain a uniform pressure during the sterilizing period by setting the weight on the arm, when the proper pressure is registered on the steam gauge, so that surplus steam will escape at that desired pressure. A uniform temperature may be maintained also, by turning down the flame or moving the canner to a less hot part of the stove.

7. When the sterilization period is complete, do not allow steam to escape, but allow the canner to cool until the steam gauge registers zero.

8. Open petcock, remove the cover of canner, and take out the jars. As each jar is removed, complete seal at once.

CONTAINERS

For home use glass jars are more satisfactory for canning than tin. This is especially true this year when there is a shortage of tin cans. Tin cans are used chiefly for canning on a large scale for commercial purposes.

There are many jars of different styles and prices on the market; and provided the seal is not defective, equally good results may be obtained from all. Glass is a popular household choice because one can see through it and thus have some idea as to the condition of the contents. Glass jars may be used for years if properly cared for.

All types of jars which seal readily may be used. Jars having glass tops held in place by bails are especially easy to handle while hot. Screw-top jars are serviceable. Glass caps held in place by separate metal screw bands are now on the market, as well as the one-piece sort of former years. Vacuum seal jars are very easily managed. Tops for Economy jars should be purchased each year. The composition material, which takes the place of rubber, should have a rubber-like texture. If of mealy consistency it is unfit for use and the top will not make a tight seal.

The color and shape of jars are not of first moment, but are to be considered. Containers made of white glass should be used if the product is to be offered for sale, as blue or green glass detracts from the appearance of the contents. Wide-mouthed jars are best for packing whole products and are easiest to clean. Small-necked bottles can be used for fruit juices. Large-mouthed bottles can be used for jams, marmalades and jellies.

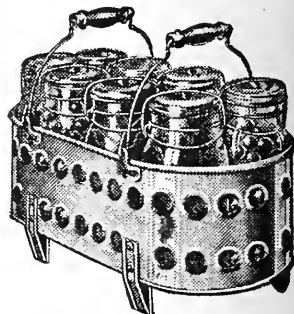


FIG. 8. Rack for jars.

TESTS FOR JARS

Jars should be tested before they are used. Some of the important tests are here given:

1. *Glass-top Jars.*—First examine for cracks. Then run a finger around the edge of necks of jars, and if there are sharp projections, file them off, or scrape them off with an old knife. If left on they may cut rubbers and interfere with perfect sealing. Place a top on a jar. It will slip from side to side, but should not rock, when tapped. Rocking tops will not make a tight seal. Sometimes the fault is with the top and sometimes with the neck. Defective jars and tops when discarded for

canning purposes may be used as containers for jams, etc. The top-bail should go into position with a light snap. If too loose it should be taken off and bent slightly inward in the center. If too tight bend outward.

2. *Screw-top Jars.*—Use only enameled, lacquered or vulcanized tops. Screw the top

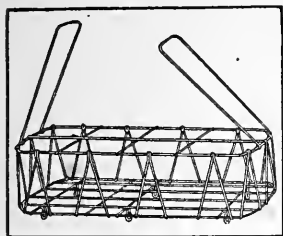


FIG. 9. Wire rack for jars.

on tightly without the rubber. If the tip of a knife or finger-nail can be inserted under the rim, the tops should not be used for cold-pack canning. If the defect is very slight, however, it may be remedied by pressing a knife handle on the lower edge against a hard surface, thus straightening the offending bulge. Another test is made by putting on the rubber, screwing the top on tightly and then pulling the rubber out. If the rubber returns to place, the top does not fit and should not be used on that jar.

3. Vacuum seal jars may be tested in the same way as the glass-top jars. See if the tops rock if tapped, when placed on the jar without fastening.

STANDARDS AND TESTS FOR RINGS

1. *Good Rubber Essential.*—Buy new rubbers every year, as rubbers deteriorate from one season to another. A good rubber for

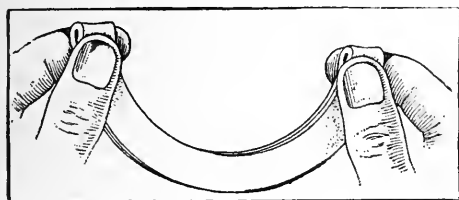


FIG. 10. Simple test for rubbers. A perfect rubber will show no crease or break after being folded tightly several times.

cold-pack canning must be such as to stand four hours of continuous boiling or one hour under 10 pounds of steam pressure. The combination of moist heat plus acids and mineral matter in vegetables and fruits tends to break down the rubbers during sterilization. Rubbers kept in a hot or very warm place, as for example, on a shelf near the kitchen range, will deteriorate in quality. Be very particular about the rubbers used. Spoilage of canned goods has been traced frequently to the use of poor rubbers.

2. *Testing Rubbers.*—It is always well to test rubbers when buying. A good rubber will return to its original size when stretched. It will not crease when bent double and pinched (Fig. 10). It should fit the neck

of the jar snugly. It is cheaper to discard a doubtful rubber than to lose a jar of canned goods.

GRADING

Vegetables and fruits should be sorted according to color, size and ripeness. This is called grading. It insures the best pack and uniformity of flavor and texture to the canned product, which is always desirable.

BLANCHING AND COLD-DIPPING

The most important steps in canning are the preliminary steps of blanching, cold-dipping, packing in hot, clean containers, adding hot water at once, then immediately half sealing jars and putting into the sterilizer. Spoilage of products is nearly always due to carelessness in one of these steps. Blanching is necessary with all vegetables and some fruits. It insures thorough cleansing and removes objectionable odors and flavors and excess acids. It starts the flow of coloring matter. It reduces the bulk of greens and causes shrinkage of fruits, increasing the quantity which may be packed in a container, which saves storage space.

Blanching consists of plunging the vegetables or fruits into boiling water or exposing them to steam for a short time. For blanching in boiling water place them in a wire basket (Fig. 17) or piece of cheesecloth (Fig. 18). The blanching time varies from one to fifteen minutes, as shown in the time-table on page 2, and the products should be kept under water throughout the period. Begin counting time when the articles are first placed in boiling water or steam.

Spinach and other greens should not be blanched in hot water. They must be blanched in steam to prevent the loss of mineral salts, volatile oils and other valuable substances. To do this place them in a colander and set this into a vessel which has a tightly fitting cover. In this vessel there should be an inch or two of water, but the water must not be allowed to touch the greens (Fig. 12). Another method is to suspend the greens in the closed vessel above an inch or two of water. This may be done in a wire basket or in cheesecloth. Allow the water to boil in the closed vessel fifteen minutes. Excellent results are obtained, also, by the use of a steam cooker or steam pressure canner.

When the blanching is complete remove the vegetables or fruits from the boiling water or steam and plunge them once or twice

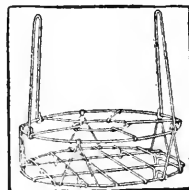


FIG. 11. Wire rack for jars.

into cold water—the colder the better. This latter process is the Cold Dip. It hardens the pulp under the skin, so that the products are not injured by peeling. It also sets the coloring matter. Do not allow the products to stand in the cold water.

Always blanch and cold-dip only enough product to fill one or two jars at a time. The blanching and cold-dipping should follow at once when the vegetable or fruit is prepared, and the packing into jars should immediately follow the blanching and cold-dip.

PROCESSING

Processing is the sterilization treatment to which products are subjected after packing them into jars. As soon as the jar is filled, put the rubber and cap in place and partially seal by adjusting top bail or screwing on top with thumb and little finger. If Economy jars are used the top should be held in place with clamp. The jar should then be put into sterilizer at once.

In using the hot-water bath outfit, count the time of sterilization from the time water

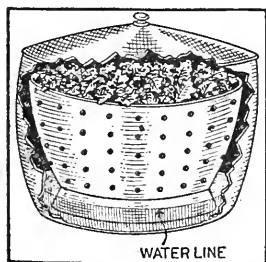


FIG. 12. Use of a colander to blanch greens in steam. The colander is placed in a receptacle with tightly fitting cover. No water should touch the greens.

begins to boil. The water in the sterilizer should be at or just below the boiling point when jars are put in. With the Water Seal Outfit begin counting time when the thermometer reaches 214° F. With the Steam Pressure Outfit begin counting time when the gauge reaches pounds called for in directions.

When the processing is finished, at once remove and seal each jar.

ARRANGING FOR CANNING

It is important to plan your work so that whatever may be needed will be ready for use. Arrange everything conveniently in advance. Preliminary provisions include:

1. A reliable alarm clock in a convenient place (set to ring when the sterilizing is done).
2. All the necessary equipment in place before beginning work. See Fig. 14.
3. Jars, tops and rubbers carefully tested.
4. Fresh, sound fruits and vegetables.
5. Plenty of hot water for sterilizer, blanching, warming the jars and for pouring into packed jars.
6. Salt or syrup at hand.
7. Reliable instructions, carefully followed.
8. Absolute cleanliness.

STEPS IN THE SINGLE PERIOD COLD-PACK METHOD

In canning by the Single Period Cold-pack method it is important that careful attention be given to each detail. Do not undertake canning until you have familiarized yourself with the various steps, which are as follows:

1. Vegetables should be canned as soon as possible after picking; the same day is best. Early morning is the best time for gathering. Fruits should be as fresh as possible.

2. Before starting work have on the stove the boiler or other holder in which the sterilizing is to be done, a pan of boiling water for use in blanching, a vessel containing water to be used for warming several jars at a time, and a kettle of boiling water for use in filling jars of vegetables; or, if canning fruits, the syrup to be used in filling the jars. Arrange on this working table all necessary equipment, including instructions. (Fig. 14.)

3. Test jars and tops. All jars, rubbers and tops should be clean and hot, at the moment of using.

4. Wash and grade product according to size and ripeness. (Cauliflower should be soaked 1 hour in salted water, to remove insects if any are present. Put berries into a colander and wash, by allowing cold water to flow over them, to prevent bruising.)

5. Prepare vegetable or fruit. Remove all but an inch of the tops from beets, parsnips and carrots and the strings from green beans. Pare squash, remove seeds and cut into small pieces. Large vegetables should be cut into pieces to make close pack possible. Remove pits from cherries, peaches and apricots.

6. Blanch in boiling water or steam as directed. Begin to count time when the product is immersed.

7. Cold-dip, but do not allow product to stand in cold water at this or any other stage.

8. Pack in hot jars which rest on cloths wrung out in hot water. Fill the jars to within $\frac{1}{4}$ to $\frac{1}{2}$ inch of tops. (In canning lima beans, squash, corn, peas, pumpkin and sweet potatoes fill the jars to within 1 inch of the top, as these vegetables swell during sterilization. In canning berries, to insure a close pack, put a 2 or 3 inch layer of berries on the bottom of the jar and press down gently with a spoon. Continue in this manner with other layers until jar is filled. Fruits cut in half should be arranged with pit surface down.)

9. Add salt and then boiling water to vegetables to cover them. To fruits add hot syrup or water.

10. Place a new wet rubber on jar and put top in place.

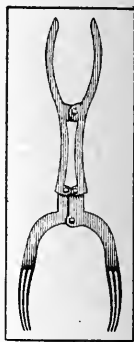


FIG. 13. A jar-lifter is useful.

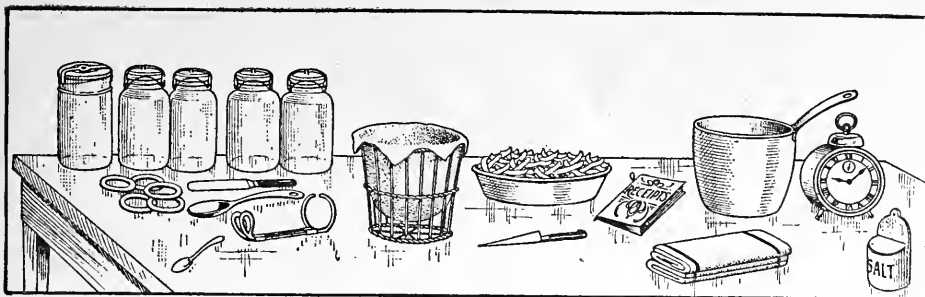


FIG. 14. Table arranged conveniently with various articles needed for canning by the Cold-pack method. The picture shows jars, rubbers, knife for removing air bubbles in containers, spoons, jar lifter, wire basket for blanching, knife for paring and coring, book of directions, towels, pan for cold-dipping, alarm clock and salt.

11. With bail-top jar adjust top bail only, leaving lower bail or snap free. With screw-top jar screw the top on lightly, using only the thumb and little finger. (This partial sealing makes it possible for steam generated within the jar to escape, and prevents breakage.) On vacuum seal jars adjust spring securely.

12. Place the jars on rack in boiler or other sterilizer. If the homemade or commercial hot-water-bath outfit is used, enough water should be in the boiler to come at least one inch above the tops of the jars, and the water, in evaporating, should never be allowed to drop to the level of these tops. In using the hot-water bath outfit, begin to count sterilizing time when the water begins to boil. Water is at the boiling point when it is jumping or rolling all over. Water is not boiling when bubbles merely form on the bottom or when they begin to rise to the top. The water must be kept boiling all of the time during the period of sterilization.

13. Consult time-table on page 2 and at the end of the required sterilizing period remove the jars from the sterilizer. Place them on a wooden rack or on several thicknesses of cloth to prevent breakage. Complete the sealing of jars. With bail-top jars this is done by pushing the snap down (Fig. 15); with screw top jars by screwing cover on tightly.

14. Turn the jars upside down as a test for leakage and leave them in this position till cold. Let them cool rapidly but be sure that no draft reaches them as a draft will cause breakage. (If there is any doubt that a bail-top jar is perfectly sealed a simple test

may be made by loosening the top bail and lifting the jar by taking hold of the top with the fingers. (Fig. 28.) The internal suction should hold the top tightly in place when thus lifted. If the top comes off put on a new wet rubber and sterilize 15 minutes longer for vegetables and 5 minutes longer for fruits.) With screw-top jars try the tops while the jars are cooling, or as soon as they have cooled, and, if loose, tighten them by screwing on more closely. Vacuum seal jars should be placed upright while cooling, and

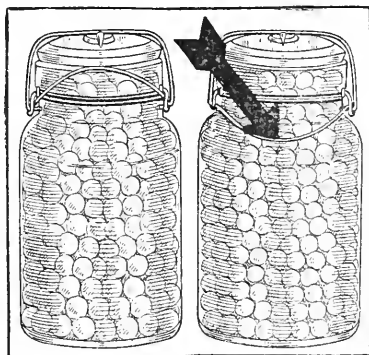


FIG. 15. To the left is a bail-top jar partially sealed and ready for sterilization. The top bail is snapped into place and the lower bail left free. To the right is shown the way to complete the seal.

the clamp removed when the jar is cool. Then lift by the top and turn upside down, as a test for leakage.

15. Wash and dry each jar, label and store. If storage place is exposed to light, wrap each jar in paper, preferably brown, as light will either fade or darken the color of products canned in glass. The boxes in which jars were brought afford good storage. Store in a cool, dark place, preferably dry. Exposure to mold will cause decay of rubber, allowing the leakage of air into jars. Paper wrappings prevent mold.

CAUTION AGAINST FREEZING

From a number of sources it has been learned that the severe weather of last winter caused considerable loss through the freezing of canned goods. To prevent similar trouble, care should be taken to store canned vegetables and fruits where they will be protected from freezing. If the place of storage is not frost-proof the jars should be moved to a warmer place in severe weather.

This Commission publishes a book on "War Gardening and the Home Storage of Vegetables," completely covering both subjects.



FIG. 16



FIG. 17



FIG. 18

In the pictures on this and the next page are shown successive steps in canning by the Single Period Cold-pack Method. FIG. 16 shows paring and coring with sharp knife. FIG. 17 shows blanching with wire basket. FIG. 18 shows blanching with cheesecloth. (Continued at top of opposite page.)

SPECIAL INSTRUCTIONS FOR CANNING VEGETABLES

The addition of 1 level teaspoonful of salt to a jar of vegetables is for quart jars. For pint jar use $\frac{1}{2}$ teaspoonful. For 2 quart jar use 2 teaspoonfuls.

Asparagus

Wash, scrape off scales and tough skin. With a string bind together enough for one jar. Blanch tough ends from 5 to 10 minutes, then turn so that the entire bundle is blanched 5 minutes longer. Cold-dip. Remove string. Pack, with tip ends up. Add 1 level teaspoonful of salt and cover with boiling water. Put on rubber top and adjust top bail or screw top on with thumb and little finger. Sterilize 120 minutes in hot-water bath. Remove jars, complete seal and cool. With Steam Pressure Outfit sterilize 60 minutes at 5 to 10 pounds pressure.

Beets

Use only small ones. Wash and cut off all but an inch or two of root and leaves. Blanch 5 minutes, cold-dip and scrape off skin and stems. They may be packed in jar sliced or whole. Add 1 level teaspoonful of salt and cover with boiling water. Put on rubber and top and adjust top bail or screw top on with thumb and little finger. Sterilize 90 minutes in hot-water bath. Remove jars, complete seal and cool.

With Steam Pressure Outfit sterilize 60 minutes at 5 to 10 pounds pressure.

Young, tender beet tops should be canned as greens.

Cabbage and Brussels Sprouts

The method is the same as for cauliflower, except that the vegetables are not soaked in salted water. Blanch 5 to 10 minutes. Sterilize 120 minutes in hot-water bath.

With Steam Pressure Outfit sterilize 60 minutes at 5 to 10 pounds pressure.

Carrots

Select small, tender carrots, leave an inch or two of stems, wash, blanch 5 minutes and cold-dip. Remove stems and scrape off skins. Pack whole or in slices, add 1 level teaspoonful of salt and cover with boiling water. Put on rubber and top and adjust top bail or screw top on with thumb and little finger. Sterilize 90 minutes in hot-water bath. Remove jars, complete seal and cool.

With Steam Pressure Outfit sterilize 60 minutes at 5 to 10 pounds pressure.



FIG. 22

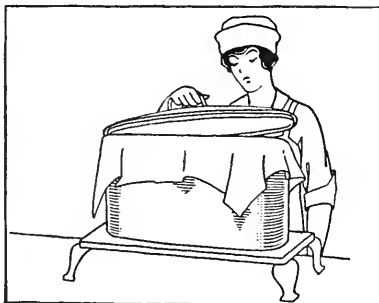


FIG. 23



FIG. 24

After partially sealing jars, place them in hot-water bath. FIG. 22 shows jar being placed in ordinary household wash-boiler for sterilizing. FIG. 23 shows the adjustment of cover, with cloth to give tighter fit and make it hold the steam. FIG. 24 shows jars being removed. (Continued at bottom of next page.)



FIG. 19



FIG. 20



FIG. 21

After blanching, as shown in Figs. 17 and 18, vegetables and fruits are cold-dipped, as shown in FIG. 19. In FIG. 20 is shown the process of filling jar, by use of funnel. FIG. 21 shows the partial sealing of jar. With bail-top jar adjust top bail only; with screw top jar screw top on lightly. (Continued at bottom of opposite page.)

Cauliflower

Wash and divide head into small pieces. Soak in salted water 1 hour, which will remove insects if any are present. Blanch 3 minutes, cold-dip and pack in jar. Add 1 level teaspoonful of salt and cover with boiling water. Put on rubber and top and adjust top bail or screw top on with thumb and little finger. Sterilize 60 minutes in hot-water bath. Remove jars, complete seal and cool.

With Steam Pressure Outfit sterilize 30 minutes at 5 to 10 pounds pressure.

Corn

Canning corn on the cob, except for exhibition purposes, is a waste of space, time and fuel. For home use remove the husks and silk, blanch tender ears 5 minutes, older ears 10 minutes, cold-dip, and cut from cob. Pack lightly to within 1 inch of the top of the jar, as corn swells during sterilization. Add 1 level teaspoonful of salt and cover with boiling water, put on rubber and top, adjust top bail or screw top on with thumb and little finger. Sterilize 180 minutes in hot-water bath. Remove jars, complete seal and cool. (When canned on cob 1 hour longer of sterilization is necessary).

With Steam Pressure Outfit sterilize 90 minutes at 5 to 10 pounds pressure.

Greens

Wash until no dirt can be felt in the bottom of the pan. Blanch in steam 15 minutes. (Mineral matter is lost if blanched in water.) Cold-dip, cut in small pieces and pack or pack whole. Do not pack too tightly. Add 1 level teaspoonful of salt and cover with boiling water. Put on rubber and top and adjust top bail or screw top on with thumb and little finger. Sterilize 120 minutes in hot-water bath. Remove jars, complete seal and cool.

With Steam Pressure Outfit sterilize 60 minutes at 5 to 10 pounds pressure.

Lima Beans

Shell. Blanch 5 to 10 minutes. Cold-dip, pack in jar, add 1 level teaspoonful of salt and cover with boiling water. Put on rubber and top, and adjust top bail or screw top on with thumb and little finger. Sterilize 180 minutes in hot-water bath. Remove jars, complete seal and cool.

With Steam Pressure Outfit sterilize 60 minutes at 5 to 10 pounds pressure.

Okra

Wash and remove stems. Blanch 5 to 10 minutes, cold-dip and pack in jar. Add 1 level teaspoonful of salt and cover with boiling



FIG. 25



FIG. 26



FIG. 27

After removal from hot-water bath jars are inverted to test for leakage (FIG. 25) and left inverted until cooled. They should be cooled rapidly, but protected from draft. FIG. 26 shows wrapping jar in brown paper to exclude light. FIG. 27 shows storage on shelves. If shelves are exposed to light, do not neglect wrapping.

A WORD OF CAUTION

It must not be forgotten that success in canning demands careful attention to every detail. No step should be slighted. Follow one set of instructions closely and do not attempt to combine two, no matter how good both of them may be. To attempt to follow two sets will inevitably cause spoilage.

The experience of the United States Department of Agriculture during the last five years indicates that 75 per cent. of the spoilage has been due to the use of poor rubbers, the use of old tops on screw-top jars, and improper sealing resulting from the use of defective joints, springs and caps. Another fruitful source of trouble is that people sometimes undertake to can stale or wilted vegetables. No amount of sterilizing will overcome staleness. Careless handling is also sure to cause loss. Absolute cleanliness in every step is essential.

In sterilizing care must be exercised to see that the temperature is high enough and maintained for the proper length of time.

**IN OTHER WORDS DO NOT BLAME THE METHOD FOR FAILURE.
FOLLOW DIRECTIONS CAREFULLY AND PREVENT FAILURE.**

water. Put on rubber and top, adjust top bail or screw top on with thumb and little finger. Sterilize 120 minutes in hot-water bath. Remove jars, complete seal and cool.

With Steam Pressure Outfit sterilize 60 minutes at 5 to 10 pounds pressure.

Parsnips

The method is the same as for carrots.

Peas

Those which are not fully grown are best for canning. Shell, blanch 5 to 10 minutes and cold-dip. Pack in jar, add 1 teaspoonful of salt and cover with boiling water. If the jar is packed too full some of the peas will break and give a cloudy appearance to the liquid. Put on rubber and top and adjust top bail or screw top on with thumb and little finger. Sterilize 180 minutes in hot-water bath. Remove jars, complete seal and cool.

With Steam Pressure Outfit sterilize 60 minutes at 5 to 10 pounds pressure.

Peppers

Wash, stem and remove seeds. Blanch 5 to 10 minutes, cold-dip and pack in jar. Add 1 level teaspoonful of salt. Cover with boiling water, put on rubber and top and adjust top bail or screw top on with thumb and little finger. Sterilize 120 minutes in hot-water bath. Remove jars, complete seal and cool.

With Steam Pressure Outfit sterilize 60 minutes at 5 to 10 pounds pressure.

Pimentos

Place in a hot oven from 6 to 8 minutes. Peel, remove seeds, and pack in flat layers. Do not add any liquid. Sterilize 35 minutes in hot-water bath.

Pumpkin, Winter Squash

(a) Remove seed. Cut the pumpkin or squash into strips. Peel and remove stringy center. Slice into small pieces and boil until

thick. Pack in jar and sterilize 120 minutes in hot-water bath. Remove jars, complete seal and cool.

(b) Another method is to prepare the pieces as in (a), blanch 3 minutes, cold-dip, pack in jars and add 1 level teaspoonful of salt to each quart jar. Cover with boiling water and sterilize as (a).

With Steam Pressure Outfit sterilize 60 minutes at 5 to 10 pounds pressure.

Salsify

Wash, blanch 5 minutes, cold-dip and scrape off skin. It may be packed whole or in slices. Add 1 teaspoonful of salt, and cover with boiling water. Put on top and rubber and adjust top bail or screw top on with thumb and little finger. Sterilize 90 minutes in hot-water bath. Remove jars, complete seal and cool.

With Steam Pressure Outfit sterilize 60 minutes at 5 to 10 pounds pressure.

String Beans

Wash and remove ends and strings and cut into small pieces if desired. Blanch from 5 to 10 minutes, depending on age. Beans which have been properly blanched will bend readily without breaking. Cold-dip, pack immediately in jar, add 1 level teaspoonful salt and cover with boiling water. Put on rubber and top and adjust top bail or screw top on with thumb and little finger. Sterilize 120 minutes in hot-water bath. Remove jars, complete seal and cool.

With Steam Pressure Outfit sterilize 60 minutes at 5 to 10 pounds pressure.

Summer Squash

Pare, cut in slices or small pieces and blanch 10 minutes. Cold-dip, pack in jars, add 1 level teaspoonful of salt, cover with boiling water, put on rubber and top and adjust top bail or screw top on with thumb and little finger. Sterilize 120 minutes in hot-

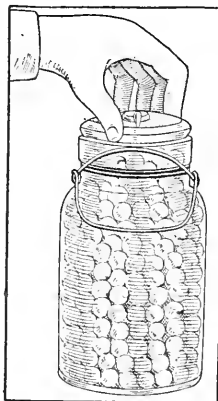


FIG. 28. A simple test for proper sealing of bail-top jars is to loosen top bail and lift jar by taking hold of top with the fingers. See Step No. 14, page 9.

water bath. Remove jars, complete seal and cool.

With Steam Pressure Outfit sterilize 60 minutes at 5 to 10 pounds pressure.

Tomatoes

Take medium sized tomatoes. Wash them, blanch $1\frac{1}{2}$ minutes or until skins are loose, cold-dip and remove the skins. Pack whole in jar, filling the spaces with tomato pulp made by cooking large and broken tomatoes until done and then straining and adding 1

level teaspoonful of salt to each quart of the pulp. Put on rubber and top and adjust top bail or screw top on with thumb and little finger. Sterilize 22 minutes in hot-water bath. Remove jars, complete seal and cool.

With Steam Pressure Outfit sterilize 15 minutes at 5 to 10 pounds pressure.

Tomatoes may be cut in pieces, packed closely into jars and sterilized 25 minutes in hot-water bath. If this is done do not add any liquid, as the liquid in the tomatoes will be sufficient.

THE CANNING OF FRUITS

For fruits, as well as for vegetables, the Single Period Cold-pack method is best. With some exceptions, as shown in the table on page 2, fruits should be blanched before canning. When fruits are intended for table use, syrup should be poured over them to fill the jars. In canning fruits to be used for pie-filling or in cooking, where unsweetened fruits are desirable, boiling water is used instead of syrup, and the sterilization period in hot-water bath is thirty minutes.

SYRUPS

In the directions given various grades of syrup are mentioned. These syrups are made as follows:

Thin—1 part sugar to 4 parts water.

Medium—1 part sugar to 2 parts water.

Thick—1 part sugar to 1 part water.

Heat the water to boiling, then add the sugar gradually, stirring constantly and keeping the liquid boiling until the sugar is dissolved. Syrup made in this way requires little or no skimming.

Use thin syrup with sweet fruits. Use medium syrup with sour fruits. Thick syrup is used in candying and preserving.

Because of the shortage of sugar it is important to use substitutes wherever possible. A very satisfactory syrup for fruits may be made of one part of light corn syrup or honey to three parts of water or juice of the fruit. Add the honey or corn syrup to the liquid and simmer ten minutes.

Allow two cupfuls of syrup to each quart jar of fruit.

SPECIAL INSTRUCTIONS FOR CANNING FRUITS

Apples

Wash, pare, quarter or slice and drop into weak salt water. Blanch $1\frac{1}{2}$ minutes, cold-dip, pack into jar and cover with water or thin syrup. Put on rubber and top and adjust top bail or screw top on with thumb and little finger. Sterilize for 20 minutes in hot-water bath. Remove jars, complete seal and cool.

With Steam Pressure Outfit sterilize 8 minutes at 5 to 10 pounds pressure.

Apples shrink during sterilization and for this reason economy of space is obtained by canning them in the form of sauce instead of in quarters or slices. In canning sauce fill the jars with the hot sauce and sterilize 12 minutes in hot-water bath.

Apricots

Use only ripe fruit. Wash, cut in half and remove pit. Blanch 1 to 2 minutes. Pack in jar and cover with medium syrup. Put on rubber and top and adjust top bail or screw top on with thumb and little finger. Sterilize 16 minutes in hot-water bath. Remove jars, complete seal, cool and store.

With Steam Pressure Outfit sterilize 10 minutes at 5 to 10 pounds pressure.

Blackberries

Wash, pack closely and cover with medium syrup. Put on rubber and top and adjust

top bail or screw on top with thumb and little finger. Sterilize 16 minutes in hot-water bath. Remove jars, complete seal and cool.

With Steam Pressure Outfit sterilize 10 minutes at 5 to 10 pounds pressure.

Blueberries

Currants

Loganberries

Raspberries

The method is the same as for blackberries. Sterilize 16 minutes in hot-water bath.

With Steam Pressure Outfit sterilize 10 minutes at 5 to 10 pounds pressure.

Cherries

Cherries should be pitted before being canned. Pack in jar and cover with medium syrup. Put on rubber and top and adjust top bail or screw on top with thumb and little finger. Sterilize 16 minutes in hot-water bath. Remove jars, complete seal and cool.

With Steam Pressure Outfit sterilize 10 minutes at 5 to 10 pounds pressure.

Fruit Juices

See "Winter Jelly Making" on page 17.

Pears

Peel and drop into salt water to prevent discoloration. Blanch $1\frac{1}{2}$ minutes. Pack in jar, whole or in quarters, and cover with thin syrup. Put on rubber and top and adjust top bail or screw on top with thumb and little

finger. Sterilize 20 minutes in hot-water bath. Remove jars, complete seal and cool. A slice of lemon may be added to the contents of each jar for flavor.

With Steam Pressure Outfit sterilize 8 minutes at 5 to 10 pounds pressure.

Peaches

Blanch in boiling water long enough to loosen skins. Some peaches do not peel readily even if dipped in boiling water. In such cases omit dipping in boiling water and pare them. Cold dip and remove skins. Cut in half and remove stones. Pack in jars and cover with thin syrup. Put on rubber and top and adjust top bail or screw on top with thumb and little finger. Sterilize 16 minutes in hot-water bath. Remove jars, complete seal and cool.

With Steam Pressure Outfit sterilize 10 minutes at 5 to 10 pounds pressure.

Plums

Wash, pack in jar and cover with medium syrup. Put on rubber and top and adjust top bail or screw on top with thumb and little finger. Sterilize 16 minutes in hot-water bath. Remove jars, complete seal and cool.

With Steam Pressure Outfit sterilize 10 minutes at 5 to 10 pounds pressure.

Pineapples

Pare, remove eyes, shred or cut into slices or small pieces, blanch 3 to 5 minutes, according to size of pieces, and pack in jar. Cover

with medium syrup. Put on rubber and top and adjust top bail or screw on top with thumb and little finger. Sterilize 30 minutes in hot-water bath. Remove jars, complete seal and cool.

With Steam Pressure Outfit sterilize 10 minutes at 5 to 10 pounds pressure.

Quinces

The method is the same as for apples. They may be canned with apples. Sterilize 20 minutes in hot-water bath.

With Steam Pressure Outfit sterilize 8 minutes at 5 to 10 pounds pressure.

Rhubarb

Wash and cut into short lengths. Cover with boiling water or thin syrup. Put on rubber and top and adjust top bail or screw on top with thumb and little finger. Sterilize 20 minutes in hot-water bath. Remove jars, complete seal and cool.

With Steam Pressure Outfit sterilize 15 minutes at 5 to 10 pounds pressure.

Strawberries

Wash and pack closely in jar. Cover with medium syrup, put on rubber and top and adjust top bail or screw on top with thumb and little finger. Sterilize 16 minutes in hot-water bath. Remove jars, complete seal and cool.

With Steam Pressure Outfit sterilize 10 minutes at 5 to 10 pounds pressure.

CANNING IN TIN

In sections where there is a large yield of fruits or vegetables canning in tin in the home is practical. This is especially true when the goods are to be sold, as tin cans are more easily transported than glass containers. Tin cans of standard sizes may be purchased in sanitary or cap and hole type. The No. 2 can is most satisfactory for canned vegetables and small fruits. No. 3 is used for peaches, pears, and tomatoes. Enameled tins should be used when canning berries, plums, cherries, beets, pumpkins, and greens.

To can in tin special equipment is needed.

This includes a capping steel, a tipping copper, fire pot for heating tools, flux, sal ammoniac and wire solder. Sanitary cans require a special machine for sealing, which eliminates the use of all other equipment.

Fruits and vegetables are prepared as shown in the directions given for the cold-pack method on pages 8 and 9. The only variation is that after the product is packed the cap is soldered and cans are then put into the sterilizer and exhausted from two to fifteen minutes, depending upon the kind of contents. Exhausting is necessary as it

A WORD AS TO BOTULISM

Wide-spread attention has been attracted by the statement that vegetables canned by the Single Period Cold-pack Method had caused cases of poisoning technically known as botulism. It has been declared that the *bacillus botulinus*, which produces botulism, was a menace to all users of vegetables canned by this method. Such statements were obviously circulated by those seeking to discourage American food-thrift. Expert research workers of the National War Garden Commission and the United States Department of Agriculture agree that there is no danger of botulism from eating vegetables which have been canned by carefully following the directions issued by the Commission or the Department. **CARE MUST BE TAKEN, HOWEVER, TO FOLLOW DIRECTIONS EXPLICITLY.** Cooking canned vegetables for 10 minutes at the boiling point, after opening the jar for use, will remove any possible danger. This applies also to Apricots and Pears.

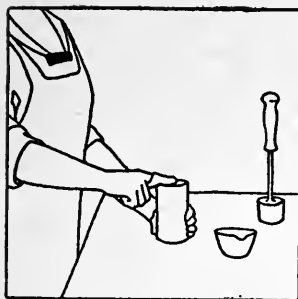


FIG. 29

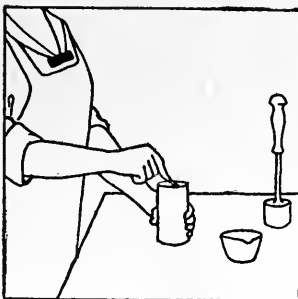


FIG. 30



FIG. 31

CANNING IN TIN. FIG. 29. Wiping juice and syrup from groove. FIG. 30. Applying cap and wiping groove with brush dipped in soldering fluid. FIG. 31. Placing clean hot capping steel on can and melting solder into groove.

drives out the air which will cause the can to bulge, giving it the same appearance as when spoilage has occurred. After exhausting, the cans are removed from the sterilizer and the vent hole is closed. The cans are returned to the sterilizer and sterilized, following the time-table given on page 2. At the end of the sterilization period remove cans and plunge immediately into cold water. Do not stack cans closely until cold.

After packing, label each can by writing the name of contents on the side. If intended for sale affix a label just before shipping. Do not allow paste to touch the can, as it will cause the tin to rust. The label should be large enough to encircle the can and overlap at the edges. Put the paste on one of the overlapping edges and draw label tightly around can, pasting the two edges together.

To seal, wipe top of can clean and dry and then put the cap in place, applying flux carefully to the groove. Do not allow the flux to enter can, as it is poisonous. Hold the cap in place with the center rod and lower the hot capping iron squarely and firmly on the solder rim of the cap, or melt a little

solder in the groove by holding the solder wire against the lower part of the capping steel. Revolve the iron to melt the solder and seal the can. Lift the capping iron with a sudden twist, holding the center rod in place. When solder has hardened remove center rod.

To tip, dry top of can and apply flux to the hole in the center of the cap. Hold the solder in the left hand, brush it with the hot tipping iron so only a bead will drop and close hole.

The steels must be kept clean and well coated with solder. To do this, if capping steel is rusty, clean with a file, brick or emery paper. To tin the capping steel heat and dip in flux, then heat again until red hot and dip in sal ammoniac and solder until well coated. Sal ammoniac is made by mixing equal parts of dry sal ammoniac with solder chips. Coat the tipping copper in same way.

Flux is made as follows: To muriatic acid add strips of zinc until no more will dissolve. Strain through a cloth and when ready to use add an equal quantity of water. Flux which is used for tinning the tools should not be used for soldering.

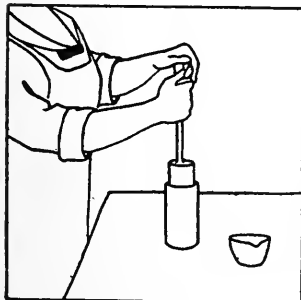


FIG. 32

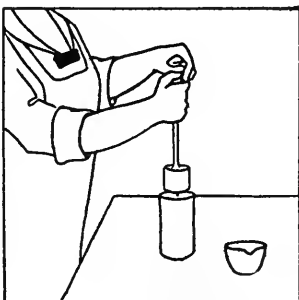


FIG. 33

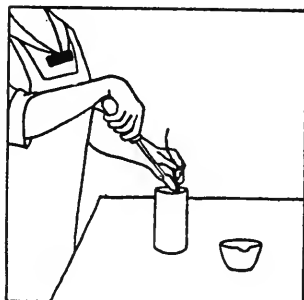


FIG. 34

CANNING IN TIN, continued. FIG. 32. Turning steel to distribute solder. FIG. 33. Raising steel to allow solder to harden after pressing down on center rod. FIG. 34. Sealing with drop of solder after exhausting can and wiping vent hole.

PRINCIPLES OF JELLY MAKING

To be satisfactory, jelly must be made from fruit juice containing pectin and acid. Pectin is a substance in the fruit which is soluble in hot water and which, when cooked with sugar and acid, gives, after cooling, the right consistency to jelly.

Fruits to be used should be sound, just ripe or slightly under-ripe, and gathered but a short time. Wash them, remove stems and cut large fruits into pieces. With juicy fruits add just enough water to prevent burning while cooking. In using fruits which are not juicy cover them with water. Cook slowly until the fruits are soft. Strain through a bag made of flannel or two thicknesses of cheesecloth or similar material.

JELLY MAKING WITH PECTIN TEST

To determine if the juice contains pectin, boil 1 tablespoonful of grain or wood alcohol and mix, gently rotating the glass. Let stand for a while. If a solid mass—which is pectin—collects, this indicates that in making jelly one part of sugar or sugar substitute (corn syrup or honey) should be used to one part of juice. If the pectin collects in two or three masses, use $\frac{2}{3}$ to $\frac{3}{4}$ as much sugar or substitute as juice. If it collects in several small particles use half. If the presence of pectin is not shown as described, it should be supplied by the addition of the juice of slightly under-ripe fruits, such as sour apples, currants, crab-apples, green grapes, green gooseberries or wild cherries.

Measure the juice and sugar or substitute. Sugar may be spread on a platter and heated. Do not let it scorch. When the juice begins to boil add the sugar or substitute. Boil rapidly. This is important. The jelly point is reached when the juice drops as one mass from the side of a spoon or when two drops run together and fall as one from the side of the spoon. Skim the juice, pour into sterilized glasses and cool as quickly as possible. Currant and green grape juice require 8 to 10 minutes boiling to reach the jelly point while all other juices require from 20 to 30 minutes.

When the jelly is cold pour over the surface a layer of hot paraffin. A toothpick run around the edge while the paraffin is still hot will give a better seal. Protect the paraffin with a cover of metal or paper.

Three or more extractions of juice may be made from fruit. When the first extraction is well drained cover the pulp with water and let it simmer 30 minutes. Drain, and test juice for pectin. For the third extraction proceed in the same manner. The juice resulting from the second and third extractions may be combined. If the third extraction shows much pectin a fourth extraction may be made. The first pectin test should be saved for comparison with the others.

If the second, third or fourth extraction of juice is found thinner than the first extraction, boil it until it is as thick as the first, then add the sugar or substitute called for.

JELLY MAKING WITHOUT TEST

The test for pectin is desirable, but it is not essential.

A large percentage of housewives make jelly without this test, and satisfactory results may be obtained without it if care is taken to follow directions and to use the right fruits. For the inexperienced jelly maker the safe rule is to confine jelly-making to the fruits which are ideal for the purpose. These include currants, sour apples, crab-apples, under-ripe grapes, quinces, raspberries, blackberries, blueberries, wild cherries, and green gooseberries. These contain pectin and acid in sufficient quantities.

In making jelly without the alcohol test, with the juice of currants and under-ripe grapes use 1 cup of sugar to 1 cup of juice. With raspberries, blackberries, blueberries, sour apples, crab-apples, quinces, wild cherries and green gooseberries use $\frac{3}{4}$ cup of sugar to 1 cup of juice. This applies to the first extraction of juice and to the later extractions when they have been boiled to the consistency of the first extraction.

Satisfactory jelly may be made by using $\frac{1}{2}$ to $\frac{3}{4}$ cup corn syrup or honey to 1 cup of fruit juice, following the general directions for jelly making. The proportion of sugar substitute will depend upon the acidity and pectin content of the fruit juice. On account of the water content of the corn syrup the juice will require a little longer cooking before the jelly point is reached.

Fruits which contain pectin but lack sufficient acid are peach, pear, quince, sweet apple and guava. With these acid may be added by the use of juice of sour apples, crab-apples or under-ripe grapes.

Strawberries and cherries have acidity but

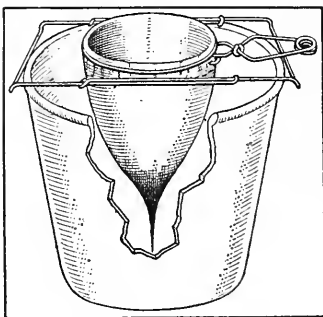


FIG. 35. Straining fruit juice.

lack pectin. The pectin may be supplied by the addition of the juice of sour apples, crab-apples or under-ripe grapes.

GENERAL DIRECTIONS FOR JELLY MAKING

Wash, remove stems, and with the larger fruits cut into quarters. Put into a saucepan and cover with water. Allow to simmer until the fruit is tender. Berries require the addition of only a small amount of water. A double boiler is excellent for heating a small quantity. Put into a bag to drain, after wringing the bag out in scalding water. If desired, test juice for pectin as described. Measure juice and sugar or syrup in proportions indicated by the test for pectin or as directed under "Jelly Making Without Test." Add the sugar or syrup when the juice begins to boil. The sugar or syrup may be heated before being added. This avoids chilling the juice. When the boiling juice reaches the jelly point as shown on page 16, skim and pour into sterilized glasses.

WINTER JELLY MAKING

Fruit juices may be canned and made into jelly as wanted during the winter. The use

of sugar is not necessary until the actual jelly making is undertaken.

To prepare for canning pour the juice into sterilized bottles or jars. Put into hot-water bath, with the water reaching to the neck of the containers. Allow to simmer 20 to 30 minutes. If jars are used half seal them during the simmering and complete seal when removed from the sterilizer. Put absorbent cotton into the necks of bottles and when the bottles are taken from the bath put in corks, forcing the cotton into the neck. Corks should first be boiled and dried to prevent shrinking. They may also be boiled in paraffin to make them air-tight. After corking the bottles apply melted paraffin to the tops with a brush, to make an air-tight seal. Each bottle should be labeled. In making jelly from these juices during the winter follow the "General Directions for Jelly Making."

Any fruit juice may be bottled following the above method and used for beverages and for flavoring desserts. Store jelly and bottled juices in a cool, dark, dry place.

The need for conserving sugar makes winter jelly making an especially useful form of conservation in these days of shortage.

FRUIT BUTTERS

Fruit butters may be made from good sound fruits or the sound portions of fruits which are wormy or have been bruised. Wash, pare and remove seeds if there are any. Cover with water and cook 3 or 4 hours at a low temperature, stirring often, until the mixture is of the consistency of thick apple sauce. Add sugar, syrup or honey to taste when the boiling is two-thirds done. Spices may be added to suit the taste when the boiling is completed. If the pulp is coarse it should be put through a wire sieve or colander. Pour the butter into sterilized jar, put on rubber and cover and adjust top bail. Put into a container having a cover and false bottom. Pour in an inch or so of water and sterilize quart jar or smaller jar 5 minutes after the steam begins to escape. Remove, push snap in place and cool.

Apple Butter with Cider

Four quarts of sweet or sterilized cider should be boiled down to 2 quarts. To this add 4 quarts of apples peeled and cut in small pieces. If the texture of the apples is coarse they should be boiled and put through a strainer before being added to the cider. Boil this mixture until the cider does not separate from the pulp. When two-thirds done add one pound of sugar, syrup or honey. One-half teaspoonful each of cinnamon, allspice and cloves may be added. Pour into sterilized jars and sterilize 5 minutes in steam.

Apple and pear butter may be made by following the directions for apple butter with cider but omitting the cider.

Peach Butter

Dip peaches in boiling water long enough to loosen the skins. Dip in cold water, peel and stone them. If peaches do not peel readily when dipped in boiling water, omit dipping and pare them. Mash and cook them without adding any water. Add half as much sugar, syrup or honey as pulp and cook until thick. Pour into sterilized jars and sterilize 5 minutes in steam.

Plum butter may be made following the directions for peach butter.

Apple Butter with Grape Juice

To every 4 quarts of strained apple sauce add 1 pint of grape juice, 1 cup of brown sugar, syrup or honey and $\frac{1}{2}$ teaspoonful of salt. Cook slowly, stirring often, until of the desired thickness. When done stir in 1 teaspoonful of cinnamon, pack in hot jars and sterilize 5 minutes in steam.

Dried Peach Butter

Soak dried peaches over night. Cook slowly until tender. To each 2 pounds of dried peaches add 1 quart of canned peaches and $1\frac{1}{4}$ pounds of sugar, syrup or honey. If a fine texture is desired, strain pulp through a colander. Cook slowly, stirring often, until thick. Pack in hot jars and sterilize 5 minutes in steam.

PART II

HOME DRYING MANUAL

Drying vegetables and fruits for winter use is one of the vital national needs. As a national need it becomes a patriotic duty. As a patriotic duty it should be done in every family.

Failure to prepare vegetables and fruits for winter use by Drying is one of the worst examples of American extravagance. During the summer nature provides an over-abundance. This year, with the planting of 5,285,000 home food gardens, stimulated by the National War Garden Commission and the United States Department of Agriculture, this abundance will be especially large. The excess supply is not meant to go to waste. The over-abundance of the summer should be made the normal supply of the winter. The individual family should conduct Drying on a liberal scale. In no other way can there be assurance that America's food supply will meet our own needs. In no other way, surely, can we answer the enormous demands made upon us for furnishing food for our European Allies.

IMPORTANCE OF FOOD THRIFT

Winter buying of vegetables and fruits is costly. It means that you pay transportation, cold-storage and commission merchants' charges and profits. Summer is the time of lowest prices. Summer, therefore, is the time to buy for winter use.

Every pound of food products grown this year will be needed to combat Food Famine. The loss that can be prevented, the money saving that can be effected and the transportation relief that can be brought about make it essential that every American household should make vegetable and fruit Drying a part of its program of Food Thrift. The results can be gained in no other way.

Vegetable and fruit Drying have been little practiced for a generation or more. Its revival on a general scale is the purpose of this Manual. There is no desire to detract from the importance of canning operations. Drying must not be regarded as taking the place of the preservation of vegetables and fruits in tins and glass jars. It must be viewed as an important adjunct thereto. Drying is important and economical in every home, whether on the farm, in the village, in the town, or in the city. For city

dwellers it has the special advantage that little storage space is required for the dried product. One hundred pounds of some fresh vegetables will reduce to 10 pounds in drying without loss of food value or much of the flavor.

This year's need for vegetable and fruit Drying is given added emphasis by the shortage of tin for the manufacture of cans. This condition has created an unusual demand for glass jars. For this year, therefore, Drying is of more than normal importance. Dried products can be stored in receptacles that could not be used for canning. This is excellent conservation.



FIG. 1. Carrots cut lengthwise.

DRYING IS SIMPLE

A strong point in connection with vegetable and fruit Drying is the ease with which it may be done. The process is simple. The cost is slight. In every home the necessary outfit, in its simplest form, is already at hand. Effective Drying may be done on plates or dishes placed in the oven, with the oven door partially open. It may be done on the back of the kitchen stove, with these same utensils, while the oven is being used for baking. It may also be done on sheets of

paper or lengths of muslin spread in the sun and protected from insects and dust.

Apparatus for home Drying on a larger scale may be made at home or bought at small cost. Still larger equipment may be bought for community drying operations in which a group of families combine for co-operative work, at a school or other con-

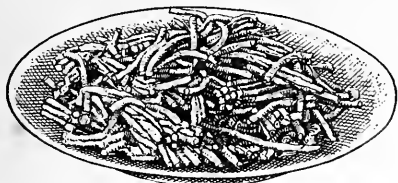


FIG. 2. Potatoes prepared by use of meat chopper.

venient center. This latter is especially recommended as giving the use of the most improved outfits at slight cost to the individual family. See "Community Work," page 3.

Best results are obtained by rapid drying, but care must be taken not to let the temperature rise above the limit specified in the directions and table.

One of the chief essentials in Drying is free circulation of air, in order that the moist air may escape and dry air take its place.

METHODS OF DRYING

For home Drying satisfactory results are obtained by any one of three principal methods. These are:

1. Sun Drying.
2. Drying by Artificial Heat.
3. Drying by Air-blast. (With an electric or other motor fan.)

These methods may be combined to good advantage.

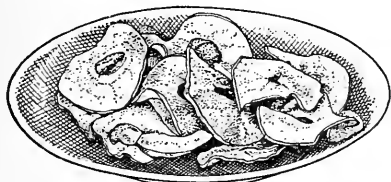


FIG. 3. Apples peeled and sliced for drying.

SUN DRYING

Sun Drying has the double advantage of requiring no expense for fuel and of freedom from danger of overheating. For sun Drying of vegetables and fruits the simplest form is to spread the slices or pieces on sheets of plain paper or lengths of muslin nailed to strips of wood and expose them to the sun. Muslin is to be preferred if there is danger of sticking. Trays should be used for large quantities. Sun Drying requires bright,

hot days and a breeze. Once or twice a day the product should be turned or stirred and the dry pieces taken out. The drying product should be covered with cheesecloth tacked to a frame for protection from dust and flying insects. Care must be taken to provide protection from rain, dew and moths. During rains and just before sunset the products should be taken indoors for protection.

TRAYS FOR SUN DRYING

To make a tray cheaply for use in sun drying, take strips of lumber three-quarters of an inch thick and 2 inches wide for the sides and ends. To form the bottom, laths should be nailed to these strips, with spaces of one-eighth of an inch between laths to permit air circulation. A length of 4 feet, corresponding to the standard lengths of laths, is economical. Nail 3 strips across the bottom in the opposite direction from the laths to prevent warping and to allow space when the trays are stacked. The

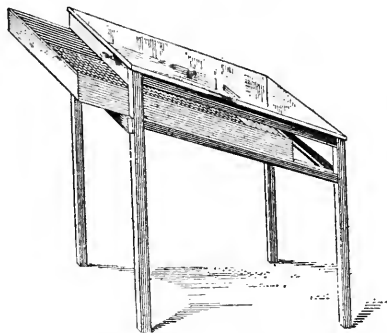


FIG. 4. Small outdoor drier, easily made at home. It has glass top, sloping for exposure to sun. Tray is shown partly projecting, to indicate construction.

trays should be of uniform size in order that they may be stacked together for convenience in handling. Never put trays directly on the ground. They should rest on supports a few feet above the ground and should face the south or southwest so as to receive the sun's rays the longest possible time.

A small homemade Sun Drier, easily constructed (Fig. 4), is made of light strips of wood, a sheet of glass, a small amount of galvanized wire screen and some cheesecloth. A convenient size for the glass top is 18 by 24 inches. To hold the glass make a light wooden frame of strips of wood $\frac{1}{2}$ inch thick and 1 inch wide. This frame should have legs of material 1 by $1\frac{1}{2}$ inches, with a length of 12 inches for the front legs and 18 inches for those in the rear. This will cause the top to slope, which aids in circulation of air and gives direct exposure to the rays of the sun. As a tray support, nail a strip of wood to the legs on each of the four sides, about

4 inches below the top framework and sloping parallel with the top. The tray is made of thin strips of wood about 2 inches wide and has a galvanized wire screen bottom. There will be a space of about 2 inches between the top edges of the tray and the glass top of the Drier, to allow for circulation. Protect both sides, the bottom and the front end of the Drier with cheesecloth tacked on securely and snugly, to exclude insects and dust without interfering with circulation. At the rear end place a cheesecloth curtain tacked at the top but swinging free below, to allow the tray to be moved in and out. Brace

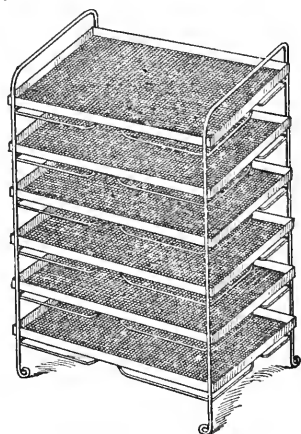


FIG. 5. Commercial drier for use in oven.

the bottom of this curtain with a thin strip of wood, as is done in window shades. This curtain is to be fastened to the legs by buttons when the tray is in place.

DRYING BY ARTIFICIAL HEAT

Drying by artificial heat is done in the oven or on top of a cookstove or range, in trays suspended over the stove or in a specially constructed drier built at home or purchased.

When drying with artificial heat a thermometer must be used. This should be placed in the drier and frequently observed.

OVEN DRYING

The simplest form of Oven Drying is to place small quantities of foodstuffs on plates in a slow oven. In this way leftovers and other bits of food may be saved for winter use with slight trouble and dried while the top of the stove is being used. This is especially effective for sweet corn. A few sweet potatoes, apples or peas, or even a single turnip, may be dried and saved. To keep the heat from being too great leave the oven door partially open. For oven use a simple tray may be made of galvanized wire screen of convenient size, with the edges

bent up for an inch or two on each side. At each corner this tray should have a leg an inch or two in length, to hold it up from

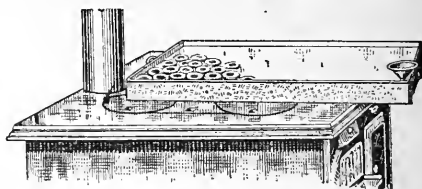


FIG. 6. Commercial drier which may be placed on top of cookstove or suspended over a lamp.

the bottom of the oven and permit circulation of air around the product.

An oven drier which can be bought at a low price is shown in Fig. 5.

DRYING ON TOP OF OR OVER STOVE

An effective Drier for use over a stove or range may be made easily at home. Such a Drier is shown in Fig. 9. For the frame use strips of wood $\frac{1}{2}$ -inch thick and 2 inches wide. The trays or shelves are made of galvanized wire screen of small mesh tacked to the supports; or separate trays, sliding on strips attached to the framework, are desirable. This Drier may be suspended from the ceiling over the kitchen stove or range, or over an oil, gasoline, or gas stove, and it may be used while cooking is being done. If an oil stove is used there must be a tin or galvanized iron bottom 4 inches below the lowest tray, to prevent the fumes of the oil from reaching and passing through the material which is to be dried, and to distribute the heat. A bottom of this kind may be easily attached to any Drier, either home-made or commercial. A framework crane as shown in Fig. 9 makes it possible for this Drier to be swung aside when not in use.

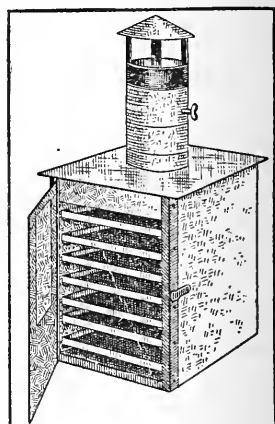


FIG. 7. Commercial drier for use on stove.

In Fig. 8 is shown another form of Home-made Cookstove Drier, more pretentious than that shown in Fig. 9, but still easily and cheaply made. A good size for this is: base, 16 by 24 inches; height, 36 inches. The lower part or supporting framework, 6 inches high, is made of galvanized sheet iron,

slightly flaring toward the bottom, and with two ventilating holes in each of the four sides. The frame, which rests on this base, is made of strips of wood 1 or 1½ inches wide.

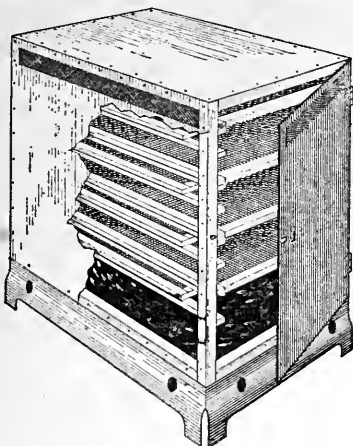


FIG. 8. Home-made drier of galvanized iron, for use on stove.

Wooden strips, 1¼ inches wide, and 3 inches apart, serve to brace the sides and furnish supports for the trays.

In a Drier of the dimensions given there is room for eight trays. The sides, top and back are of galvanized iron or tin sheets, tacked to the framework, although thin

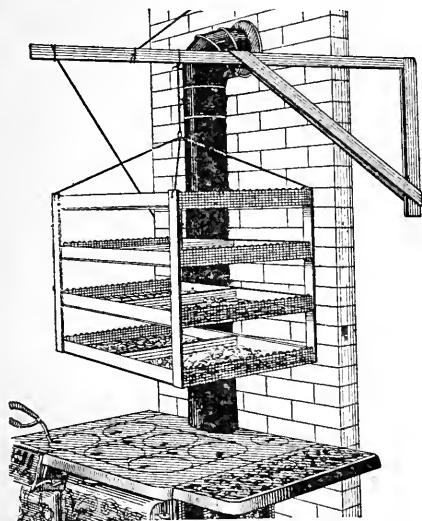


FIG. 9. Home-made drier with swinging crane.

strips of wood may be used instead of the metal. Small hinges and thumb-latch are provided for the door. Galvanized sheet iron, with numerous small holes in it, is used for making the bottom of the Drier. To prevent direct heat from coming in con-

tact with the product, and also to distribute the heat by radiation, a piece of galvanized sheet iron is placed 2 inches above the bottom. This piece is 3 inches shorter and 3 inches narrower than the bottom and rests on two wires fastened to the sides.

The trays are made of wooden frames of 1-inch strips, to which is tacked galvanized wire screen. Each tray should be 3 inches shorter than the Drier and enough narrower to allow it to slide easily on the supports in being put in or taken out.

In placing the trays in the Drier push the lower one back as far as it will go, leaving a 3-inch space in front. Place the next tray even with the front, leaving the space at the back. Alternate all the trays in this way, to facilitate the circulation of the heated air. It is well to have a ventilating opening, 6 by 2 inches, in the top of the Drier to discharge moisture.

The trays should be shifted during the drying process, to procure uniformity of drying.

One of the simplest forms of homemade Drier is a tray with bottom of galvanized wire screen, suspended over stove or range, as shown in Fig. 12.

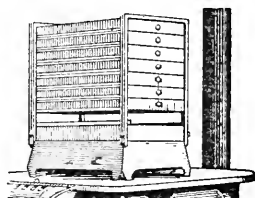


FIG. 10. Commercial drier.

Commercial Driers

Cookstove Driers are in the market in several types. One of these, shown in Fig. 7, has a series of trays in a framework, forming a compartment. This is placed on top of the stove. A similar drier is shown in Fig. 10. Another, shown in Fig. 6, is a shallow metal box to be filled with water, and so constructed that one end may rest on the back of the stove and the other on a prop reaching to the floor, or it may be suspended over a lamp.

Commercial Driers having their own furnaces may be bought at prices ranging from \$24 to \$120. This type is pictured in Fig. 11. Some of these, in the smaller sizes, may be bought without furnaces, and used on the top of the kitchen stove, as Fig. 7. The cost is from \$16 upwards.

AIR-BLAST—ELECTRIC FAN

The use of an electric fan is an effective means of Drying. Fig. 15 shows how this household article is used. A motor fan run by kerosene or alcohol serves the same purpose. Sliced vegetables or fruits are placed on trays and the fan placed close to one end of the box holding the trays, with the current

directed along the trays, lengthwise. Insects must be kept out by the use of cheesecloth or similar material. Drying by this process may be done in twenty-four hours or less. With sliced string beans and shredded sweet potatoes a few hours are sufficient, if the air is dry. Rearrange the trays after a few hours, as the drying will be more rapid nearest the fan.

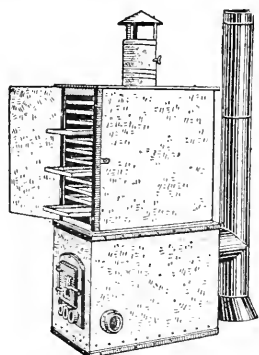


FIG. 11. Commercial drier with furnace.

is important to blanch or steam the vegetables for the full specified time. It is also necessary that all fan-dried products be heated in an oven to 180° F. for 10 or 15 minutes before storing.

DETAILS OF DRYING

As a general rule vegetables or fruits, for Drying, must be cut into slices or shreds, with the skin removed. In using artificial heat be careful to start at a comparatively low temperature and gradually increase. Details as to the proper scale of temperatures for various vegetables and fruits are given in the directions in this Manual and in the timetable on page 28. To be able to gauge the heat accurately a thermometer must be used. An oven thermometer may be bought at slight cost. If the thermometer is placed in a glass of salad oil the true temperature of the oven may be obtained.

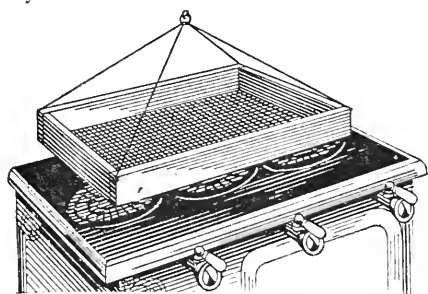


FIG. 12. Simple tray drier made at home.

In the detailed instructions on pages 25, 26, 27 and 28, the temperatures used are Fahrenheit. The temperatures indicated are for Drying by artificial heat.

The actual time required for Drying cannot be given, and the person in charge must

exercise judgment on this point. A little experience will make it easy to determine when products are sufficiently dried. When first taken from the Drier vegetables should be rather brittle, and fruits rather leathery and pliable. One method of determining whether fruit is dry enough is to squeeze a handful, if the fruit separates when the hand is opened, it is dry enough. Another way is to press a

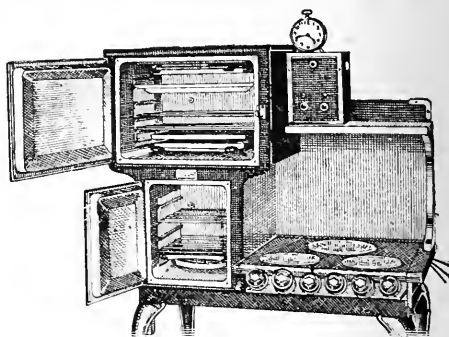


FIG. 13. Electric range, useful for drying.

single piece; if no moisture comes to the surface the piece is sufficiently dry. Berries are dry enough if they stick to the hand but do not crush when squeezed.

PREPARING MATERIAL FOR DRYING

A sharp kitchen knife will serve every purpose in slicing and cutting vegetables and fruits for Drying if no other device is at hand. The thickness of the slices should be from an eighth to a quarter of an inch. Whether sliced or cut into strips the pieces should be small so as to dry quickly. They should not, however, be so small as to make them hard to handle or to keep them from being used to advantage in preparing dishes for the table such as would be prepared from fresh products.

Food choppers, crout slicers or rotary slicers may be used to prepare food for drying.

Vegetables and fruits for Drying should be fresh, mature and in prime condition for eating. As a general rule vegetables will dry better if cut into small pieces with the skins removed. Berries are dried whole. Apples, quinces, peaches and pears dry better if cut into rings or quarters. Cleanliness is imperative. Knives and slicing

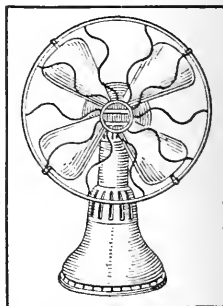


FIG. 14. Motor-fan, run by kerosene or alcohol.

devices must be carefully cleansed before and after use. A knife that is not bright and clean will discolor the product on which it is used and this should be avoided.

BLANCHING

Blanching is desirable for successful vegetable Drying. Blanching gives more thorough cleansing, removes objectionable

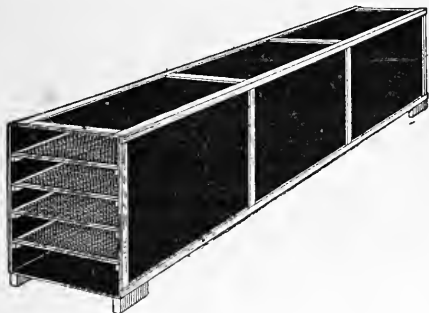


FIG. 15. Series of trays enclosed in wall-board box, for use with electric fan.

odors and flavors, kills protoplasm and softens and loosens the fiber, allowing quicker and more uniform evaporation of the moisture, stops destructive chemical changes, and gives better color. It is done by placing the vegetables in a piece of cheesecloth, a wire basket or other porous container and plunging them into boiling water. A more desirable way is to blanch in steam. For small quantities a pail or deep kettle is serviceable. A false bottom raised an inch or more is necessary. Upon this rests a wire basket or cheesecloth filled with the prepared vegetables. The water should be just below the false bottom and be boiling vigorously when the products are put in. Cover with a tight-fitting cover. Keep the water boiling during the blanching period. For larger

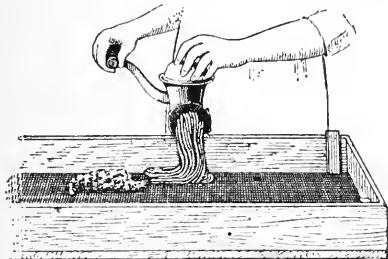


FIG. 16. Meat chopper for preparing vegetables.

quantities a wash-boiler partially filled with water is convenient. Bricks set on end or a wooden frame raised a few inches above the water make good supports for the containers.

Do not continue blanching longer than the prescribed time as some of the valuable constituents will dissolve out, the color will be destroyed and the starch will be partially cooked to a paste.

The time required is short and varies with different vegetables. For the proper time in each case consult the directions given for Drying on pages 25, 26, 27 and 28 and the time-table on page 28.

After blanching, drain to remove moisture and arrange on trays.

DANGER FROM INSECTS

In addition to exercising great care to protect vegetables and fruits from insects during the Drying process, precautions should be taken with the finished product to prevent the hatching of eggs that may have been deposited. One measure that is useful is to subject the dried material to a heat of 180° F. for from 5 to 10 minutes. By the application of this heat the eggs will be killed. Be careful not to apply heat long enough to damage the product. Store as soon as removed from the oven.

"CONDITION" BEFORE STORING

The word "conditioning" as used in connection with drying vegetables and fruits simply means "thorough drying." It indicates the after treatment of products on their removal from the drying trays.

Put the dried products in bins, boxes, or, if the quantity is small, in bowls. Once a day for a period of ten days to two weeks, stir thoroughly or pour from one box to another. The containers should be in a clean, dry room, and protected from light and insects. Shutters and screens at the window are desirable. Otherwise protect the dried food by spreading clean cloths over it. If any part of the material is found to be moist, after this process, return it to the drier for a short time. When for several days no change in the moisture content has been noticed, and therefore no extra drying has been necessary, the products are ready to be stored.

Properly conditioned products can be stored without danger of spoiling, because spores and fungi cannot begin growth if there is uniform freedom from moisture on the surface.

PRACTICALLY ALL DRIED PRODUCTS SHOULD BE CONDITIONED.

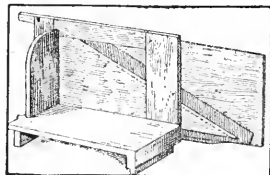


FIG. 17. Crout slicer.

STORAGE FOR DRIED PRODUCTS

Of importance equal to proper Drying is the proper packing and storage of the finished product. With the scarcity of tins and the high prices of glass jars it is recommended that other containers be used. Those easily available are baking-powder cans and similar covered tins, pasteboard boxes having tight-fitting covers, strong paper bags, and patented

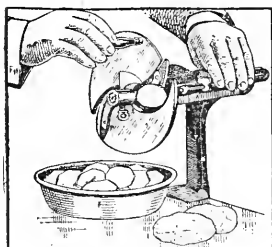


FIG. 18. Vegetable and fruit slicer.

paraffin paper boxes, which may be bought in quantities at comparatively low cost.

A paraffin container of the type used by oyster dealers for the delivery of oysters will be found inexpen-

sive and easily handled. If using this, or a baking-powder can or similar container, after filling adjust the cover closely. For storage on a larger scale use closely built wooden boxes with well-fitted lids. Line each box with paraffin paper in several layers. The paper should cover the top of the contents.

It is essential that the container should exclude light and insects but it should not be air-tight. Products stored in air-tight containers suffer damage through moisture which escapes from the product and condenses in the package.

If a paper bag is used, the top should be twisted, doubled over and tied with a string.

Another good precaution is to store bags within an ordinary lard pail or can or other tin vessel having a fairly close-fitting cover.

The products should be stored in a warm, dry place, well ventilated and protected from rats, mice and insects. An attic or upstairs-room which is warmed by pipes or flues passing through makes a very satisfactory place. Shelves near

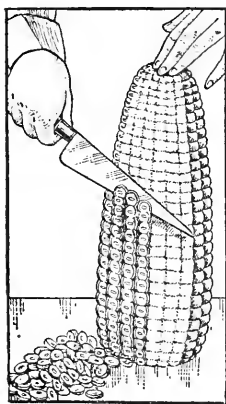


FIG. 19. Slicing corn.

a furnace also make a suitable storage place.

In sections where the air is very moist, especial care must be used. The containers should be opened occasionally and if any moisture has been taken up the contents should be placed in the oven until dry.

It is good practice to use small containers so that it may not be necessary to leave the contents exposed long after opening before use.

For convenience label all packages.

Before storing products prepared by sun drying, artificial heat must be applied to destroy possible insect eggs. To do this place the products in the oven, spread in thin



FIG. 20. Arranging vegetables or fruits on trays.

layers, and allow them to remain until the temperature reaches 180° F. as indicated by a thermometer inside partially open oven.

WINTER USE OF PRODUCTS

In preparing dried vegetables and fruits for use the first process is to restore the water which has been dried out of them. All dried foods require soaking. After soaking the dried products will have a better flavor if cooked in a covered utensil at a low temperature for a long time. Dried products should be prepared and served as fresh products are prepared and served. They should be cooked in the water in which they have been soaked, as this utilizes all of the mineral salts, which would otherwise be wasted.

There can be no definite rule for the amount of water required for soaking dried products when they are to be used, as the quantity of water evaporated in the drying process varies with different vegetables and fruits. As a general rule from 3 to 4 cups of water will be required for 1 cup of dried material.

In preparing for use, peas, beans, spinach and like vegetables should be boiled in water to which there has been added soda in the proportion of $\frac{1}{8}$ teaspoonful of soda to 1 quart of water. This improves the color.

In preparing to serve dried vegetables season them carefully. For this purpose celery, mustard, onion, cheese and nutmeg give desirable flavoring, according to taste.

From 3 to 4 quarts of vegetable soup may be made from 4 oz. of dried soup vegetables.

DIRECTIONS FOR VEGETABLE DRYING

Potatoes

Wash well, and pare very thinly. If a rotary peeler is used, the potatoes should be graded for size, and those of similar size pared in groups. The eyes will have to be removed by hand. Cut into slices $\frac{1}{8}$ to $\frac{1}{4}$ inch thick. Blanch in steam 1 to 3 minutes; or in boiling water 2 to 3 minutes. The water should boil vigorously enough to keep the pieces separated and in motion. Drain and place on drying trays in one-inch layers, then dry at once. The blanching should be just long enough to prevent darkening while the potatoes are drying. Start drying at a temperature of 125° F. and raise gradually to 145° to 150° F. toward the end of the drying period. When dry enough, the pieces of potato will be free from opaque, spongy white places, and will rattle when stirred. Remove from drier, condition and store.

Beets, Carrots and Parsnips

Wash well, scrape off skin, and cut into slices of a uniform thickness— $\frac{3}{8}$ to $\frac{1}{4}$ inch. Blanch 2 minutes in steam or boiling water. Drain well, spread on drying trays, and dry at an initial temperature of 120° F. and not exceeding 145° F. during the entire drying period. These products are sufficiently dry when the pieces break if an effort is made to bend them, and when no moisture shows if they are pressed between the fingers.

Cabbage

Take heads which are well developed. Remove all loose outside leaves and central stalk. Shred or cut into strips a few inches long. Blanch in steam 3 minutes, or in boiling water 4 minutes. Use a wire basket, fill not more than 6 to 8 inches deep; and stir well during the process. When drying, spread in layers not over 1 inch deep, and stir frequently until the product is dry enough not to stick together in close masses. Begin drying at 115° to 125° F. and when the cabbage is nearly dry, raise the temperature not to exceed 135° F. Remove from drier when no moisture can be squeezed out of thicker pieces by strong pressure between the fingers.

Cauliflower

After cleaning, divide into small pieces. The head may be cut by a vegetable slicer, if preferred. Blanch 6 minutes in steam or 4 minutes in boiling water. Spread in thin



FIG. 21. Preparing dried products for storing.

layers on drying trays. Start at a temperature of 120° F. and gradually increase to 130° F. Although turning dark while drying, cauliflower will regain part of original color in soaking and cooking. The drying is complete when strong pressure between the fingers does not squeeze out moisture from the thicker pieces.

Celery

After washing, carefully cut into even-length pieces— $\frac{3}{4}$ inch or 1 inch is a good measure. Blanch 3 minutes in steam or 2 minutes in boiling water. Drain well, and spread on drying trays in $\frac{1}{2}$ inch layers. Dry at 135° F., stirring occasionally.

Garden Peas

If the pods are dusty, wash well before shelling. Garden peas with non-edible pod are taken when of size suitable for table use. Blanch 3 to 5 minutes according to size, then drain and spread on drying trays. A depth of $\frac{3}{4}$ to 1 inch is practicable, but single layers will dry quicker. Start the drying at

FIRE PREVENTION

In home drying care should be taken that danger from fire does not result. Driers made wholly or partly of wood should not be exposed to heat in such way that the woodwork might catch fire if accidentally overheated or left alone too long. **DO NOT USE WOOD ON TOP OF A STOVE.**

a temperature of 115° to 120° F., raising it gradually to 140° F. Stir occasionally. When sufficiently dry, peas will show no moisture near the center when split open.

For use in soups or puree, shell mature peas, pass them through a meat grinder, spread the pulp on trays and dry.

Spinach

Select plants which are well grown. Remove roots and wash well. Steam 2 minutes. Spread on tray and dry at a constant temperature of 130° F. Remove from drier before the leaves break when handled.

Green String Beans

Select only such beans as are in perfect condition for table use. Wash carefully and string. If full grown they should be slit lengthwise or cut—not snapped—into pieces $\frac{1}{4}$ to 1 inch long. Blanch 5 to 8 minutes according to age. To set the color of nearly grown beans add 2 level tablespoonfuls of baking soda to every gallon of boiling water. Drain well after blanching and spread in thin layers on drying trays. Begin the drying at a temperature of 130° F. and gradually raise it to 140° or 145° F. Drying is complete when no moisture can be pressed from freshly broken pieces.

Lima Beans

Choose mature beans. Shell and blanch 3 minutes in boiling water, keeping the beans well stirred by the motion of the rapidly bubbling water. Drain to remove surface moisture. Spread in thin layers on drying trays, and stir occasionally during the drying process. Start drying at 120° to 130° F. and raise this temperature gradually to 150° F.

Okra

After washing, blanch young tender pods 2 to 3 minutes in boiling water or steam. Allow 2 minutes for older pods, which should be cut into halves or quarters. Dry the younger pods whole. Spread on trays in single layers and start drying at a temperature of 115° F. to 120° F. Gradually raise this to 135° F.

Okra may also be dried by being strung on a string and hung over the stove. This should not be done except with young and tender pods. Heat in oven before storing.

Onions

Peel and cut into $\frac{1}{8}$ to $\frac{1}{4}$ inch slices. A rotary slicer is convenient for this. Blanching is not needed. Spread in thin layers, on drying trays and dry at a uniform temperature of 140° F. Stir occasionally when the process is three-fourths done to prevent pieces scorching. Remove promptly from drier when pieces break on bending.

Pumpkin and Squash (Summer and Winter)

Pare, remove seeds and spongy portions. Cut into $\frac{1}{2}$ inch pieces. Blanch 3 to 6 min-

utes, or until the pieces are semi-transparent. Spread on trays. Start drying at a temperature of 135° F. and raise this slowly to 160° F. These products will be pliable and leathery when dried enough, and show no moisture when cut.

The strips may be hung on strings and dried in the kitchen above the stove.

Shell Beans and Peas

Beans of different kinds, after maturing and drying on the vines, and being shelled, should be heated to 165° to 180° F. for 10 to 15 minutes to destroy any insect eggs which may be in them. This may be done in an oven. These heated beans cannot be used for planting, because they are devitalized and will not grow. Store in a dry place in bags.

Mature lima beans need only to be shelled and stored in bags. Cow peas or any field pea can be treated in the same way.

Sweet Potatoes

Wash, pare and slice, blanch 6 to 8 minutes and spread on drying trays. Dry until brittle, starting at a temperature of 145° to 150° F. and gradually raising it to 155° to 165° F., when the drying is nearly done. Remove from drier when pieces are brittle and break under pressure.

Tomatoes

Select fruit which is firm and well ripened. Blanch 1 or 2 minutes, or long enough to loosen the skins. When cool enough to handle, peel, and cut into slices $\frac{3}{8}$ to $\frac{1}{2}$ inch thick. Spread in single layers on drying trays, placing cheesecloth or other thin open-mesh fabric over the tray bottoms if made of wire. Start drying at a temperature of 120° F. and raise it gradually to 140° F. When dry enough the tomatoes will break when bent, on conditioning they will become somewhat pliable.

Turnips

Turnips for drying should be in prime condition and free from pithiness. Prepare as directed for potatoes. Blanch 1 to 2 minutes, drain and spread on drying trays. The drying temperature is 135° to 140° F. at the beginning, gradually raised to 160° to 165° F. When dry enough the pieces will rattle when stirred.

Wax Beans

These are dried in the same manner as lima beans.

Soup Mixtures

Vegetables for soup mixtures are prepared and dried separately. These are mixed as desired.

Sweet Corn

Select ears that are at the milk stage, prime for table use and freshly gathered. Blanch on cob in boiling water for 8 to 12 minutes to

set milk. Drain thoroughly, and with a sharp knife cut off in layers or cut off half the kernel and scrape off the remainder, taking care not to include the chaff. Start

at temperature of 130° F. and raise gradually to 140°, stirring frequently.

Corn is dry when it is hard and semi-transparent.

DIRECTIONS FOR FRUIT DRYING

Fruits may be dried in the sun until the surface begins to wrinkle, then finished in the drier. With stone fruits, such as peaches, plums, apricots and cherries, none but fruits that are fresh, ripe and in perfect condition should be used. With apples, pears and quinces, effective thrift calls for using the sound portions of fruit that may be partially wormy or imperfect. When properly dried, fruits should be entirely free from moisture when pressed between the fingers on removal from drier and should be leathery and pliable.

Sulphuring Fruits

Apples, pears, peaches and apricots are subject to chemical changes as soon as the skin is removed or the flesh exposed to the air. To stop these changes and so preserve the natural appearance, color and flavor, it is necessary, before drying, to sulphur these fruits, as they can not be blanched. Blanching causes loss of sugars in the blanching process and dripping of the juice occurs when blanched fruits are subjected to the heat of the drier. Sulphuring does not affect the food value of the fruits and is not injurious to persons using them.

Provide a box large enough to enclose a stack of trays. This may be a packing box or a frame covered with canvas, building paper or wall-board. Stack the filled trays on bricks or blocks of wood which will hold the bottom tray several inches above the ground. The trays should be separated from each other by blocks of wood. Beneath this stack place one or two sticks of sulphur in an old saucepan, shovel or other holder. Set fire to this sulphur by using coals or lighted shavings and invert the box to cover trays and reach to the ground. Add sulphur as needed during the time specified in the directions. The time varies with various fruits and is given in special directions on pages 27 and 28.

Apples and Pears

Pare, core and slice, dropping slices into cold water containing eight level teaspoonfuls of salt to the gallon, if a light-colored product is desired. Leaving them for a short time in salt water will prevent discoloration. (If preferred, core the whole fruit, after peeling, and slice into rings, dipping these for a minute or two into cold salted water as described above.)

To sulphur spread in trays of wire 1 to 1½ inches deep. Put each tray as soon as filled

into the sulphuring box for 20 to 30 minutes. When the product feels moist on the surface and shows a lightened color, the sulphuring is complete.

Begin drying at 130° F. and raise this gradually to 175° F. Stir or rearrange fruit occasionally to insure even drying. The fruit is dry when a handful of slices is pressed and separate when released, leaving no moisture on the hand.

Apricots

Select ripe fruit before it drops from the tree. Remove pits by cutting fruit open with a sharp knife. Apricots are usually dried with the skins on. Arrange the halves on trays with pit cavity uppermost, and dry. If desired, they may be sulphured before drying—the time 1½ to 2 hours, or until liquid collects in the stone cavity.

Start drying at a temperature of 130° to 145° F. and raise it gradually to 165° F. Remove from the drier when pliable and leathery.

Berries

Dry as soon as possible after picking. Spread in thin layers and put each tray as soon as filled into the drier. It may be necessary to spread cheesecloth over wire mesh bottoms of trays to keep berries from falling through.

It is not advisable to dry such fruits as red raspberries, currants and strawberries, unless no other conservative methods are convenient.

Start the drying at a temperature of 135° to 145° F. and raise it gradually toward the end of the drying process to 150° to 155° F. Properly dried berries rattle somewhat when stirred and show no moisture when pressed.

Cherries

Pick over well and wash. Remove surface moisture by draining. Spread unpitted in thin layers.

Start drying at a temperature not above 120° F. and raise gradually to 150° F. Properly dried cherries are leathery.

Figs

Select ripe figs and pick over thoroughly. Wash, drain well and spread in single layers on drying trays. If dried in the sun, turn daily, protect from insects by glass or netting, and bring indoors at night. When applying artificial heat, start drying at a temperature of 120° F. and raise this gradually to 140° F. When nearly dry, immerse figs for 2 or 3 minutes in boiling brine (¼ pound salt to every 3 quarts water, or 1 pound to 3 gallons.) Drain, and finish the drying.

Peaches

Select fruit which is uniformly and fully ripe. Cut open with a sharp knife and remove the pits. Peaches are not usually pared, as the juice is lost by dripping if this is done. To sulphur arrange in single layers on trays with the pit surface up. Sulphuring will take from 1-2 hours and is complete when the juice collects in the pit. Care must be taken when transferring trays to drier to prevent loss of juice.

Start drying at a temperature of 130° to 145° F. and raise it gradually to 165° F. when the process is nearly completed.

Properly dried peaches are pliable and leathery.

Plums

Select fruit which is ripe. Remove pits by cutting fruit open with a sharp knife. Arrange halves on trays in single layer with pit cavity uppermost.

Treat with sulphur fumes 20 to 25 minutes. When liquid collects in the pit cavity the

plums are sulphured enough, and are ready to dry. Start drying at a temperature of 130° to 145° F. When the surface begins to wrinkle increase slowly to 175° F.

Properly dried plums are leathery and pliable.

Prunes

Prunes which are fully ripe and have fallen from the trees are best for drying. Grade and dip into boiling lye for 16 to 20 seconds. Allow 1 oz. lye to 2 gallons water. When dipped long enough there will be a slight indication of cracking of the skin near the stem end, but the skin will not be broken. Too strong lye or too long a dip will cause the skin to split and peel off.

Rinse thoroughly in cold water and then spread on drying trays in single layers. Start drying at 130° F. and when the surface begins to wrinkle, raise the temperature very gradually to 175° F. Properly dried prunes show no moisture when cut or when pressed between the fingers.

TABLE FOR BLANCHING AND DRYING

The following table shows blanching time for vegetables and the temperatures to be used in drying by artificial heat.

Vegetables	Blanching Time	Temperature (Fahrenheit)
	Minutes	Degrees
Beets.....	2	120 to 145
Cabbage.....	3 to 4	115 to 135
Carrots.....	2	120 to 145
Cauliflower.....	4 to 6	120 to 130
Celery.....	2 to 3	135
Figs.....		120 to 140
Garden peas.....	3 to 5	115 to 140
Green string beans.....	5 to 8	130 to 145
Lima beans.....	3	150
Okra.....	3	115 to 135
Onions.....		140
Parsnips.....	2	120 to 145
Potatoes.....	2 to 3	125 to 150
Prunes.....		130 to 175
Pumpkin and Winter squash.....	3 to 6	135 to 160
Spinach.....	2	130
Summer squash.....	3 to 6	135 to 160
Sweet corn.....	8 to 12	130 to 140
Sweet potatoes.....	6 to 8	145 to 165
Tomatoes.....	1½	120 to 140
Turnips.....	1 to 2	135 to 165
Wax beans.....	3	150
Fruits		
Apples.....		130 to 175
Apricots.....		130 to 165
Berries.....		130 to 155
Cherries.....		120 to 150
Peaches.....		130 to 165
Pears.....		130 to 175
Plums.....		130 to 165

The exact time for Drying cannot be given. Individual judgment must be used following the directions in "Details of Drying," on page 22, and the directions on pages 25, 26, 27 and 28.

FERMENTATION AND SALTING

The use of brine in preparing vegetables for winter use has much to commend it to the household. The fermentation method is in general use in Europe, and is becoming better known in this country as a means of making sour-cROUT and other food products which do not require the containers used for canning. No cooking is required by this process. Salt brine is the one requirement. The product may be kept in any container that is not made of metal and is water-tight. The vital factor in preserving the material is the lactic acid which develops in fermentation. An important feature is that vegetables thus prepared may be served as they are or they may be freshened by soaking in clear water and cooked as fresh vegetables.

Sour-cROUT

The outside leaves of the cabbage should be removed, the core cut crosswise several times and shredded very finely with the rest of the cabbage. Either summer growth or fall cabbage may be used. Immediately pack into a barrel, keg or tub, which is perfectly clean, or into an earthenware crock holding four or five gallons. The smaller containers are recommended for household use. While

packing distribute salt as uniformly as possible, using 1 pound of salt to 40 pounds of cabbage. Sprinkle a little salt in the container and put in a layer of 3 or 4 inches of shredded cabbage and pack down gently with a

wooden utensil like a potato masher. Repeat with salt, cabbage and packing until the container is full or the shredded cabbage is all used. Press the cabbage down as tightly

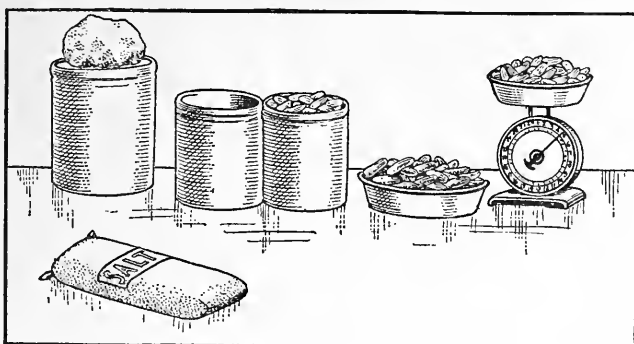


FIG. 22. Articles used in fermenting vegetables.

On top of this cover place stones or other weights (using flint or granite and avoiding the use of limestone or sandstone). These weights serve to force brine above cover.

Allow fermentation to proceed for 10 days or two weeks, if the room is warm. In a cellar or other cool place three to five weeks may be required. Skim off the film which forms when fermentation starts and repeat this daily if necessary to keep this film from becoming scum. When gas bubbles cease to arise, if container is tapped, the fermentation is complete. If there is scum it should be removed. As a final step pour melted paraffin over the brine until it forms a layer from $\frac{1}{4}$ to $\frac{1}{2}$ inch thick to prevent the formation of the scum which occurs if the weather is warm or the storage place is not well cooled. This is not necessary unless the crout is to be kept a long time. The crout may be used as soon as the bubbles cease to rise. If scum forms and remains the crout will spoil. Remove scum, wash cloth cover and weights, pour off old brine and add new. To avoid this extra trouble it is wise to can the crout as soon as bubbles cease to rise and fermentation is complete. (To can, fill jars, adjust rubbers and partly seal. Sterilize 120 minutes in Hot-water Bath or 60 minutes in Steam Pressure Outfit at 5 to 10 pounds pressure.)

SALTING WITHOUT FERMENTATION

Preserving cabbage, string beans and greens for winter use by salting is a method which has long been used. To do this the vegetables should be washed, drained and weighed. The amount of salt needed will be one-fourth of the weight of the vegetables. Kegs or

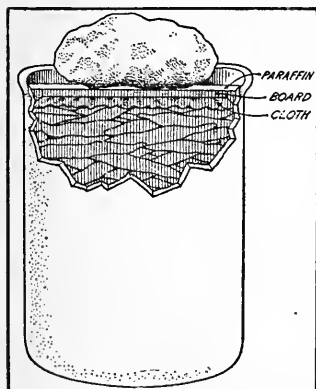


FIG. 23. Arrangement of cover on crock containing fermented products. Note the use of paraffin, board and cloth.

wooden utensil like a potato masher. Repeat with salt, cabbage and packing until the container is full or the shredded cabbage is all used. Press the cabbage down as tightly

crocks make satisfactory containers. Put a layer of vegetables about an inch thick on the bottom of the container. Cover this with salt. Continue making alternate layers of vegetables and salt until the container is almost filled. The salt should be evenly distributed so that it will not be necessary to use more salt than the quantity required in proportion to the vegetables used. Cover the surface with a cloth and a board or glazed plate. Place a weight on these and set aside in a cool place. If sufficient liquor to cover the vegetables has not been extracted by the next day, pour in enough strong brine (1 pound of salt to 2 quarts of water) to cover surface around the cover. The top layer of vegetables should be kept under the brine to prevent molding. There will be some bubbling at first. As soon as this stops set the container where it will not be disturbed until ready for use. Seal by pouring very hot paraffin on the surface.

THE USE OF BRINE

This method is used for cucumbers, string beans, green tomatoes, beets, corn and peas, as these vegetables do not contain enough water for a good brine using only salt. Wash and put in a crock or other container within 3 or 4 inches of the top. Pour over them a brine made by adding to every 4 quarts of water used $\frac{1}{2}$ pint of vinegar and $\frac{3}{4}$ cup salt. The amount of brine needed will be about $\frac{1}{2}$ the volume of the material to be fermented. When fermentation is complete the container should be sealed as detailed for sour-croût.

To Ferment Cucumbers

Unless the cucumbers are from your own garden wash them carefully to insure cleanliness after indiscriminate handling. Pack them in a keg, barrel or crock, leaving space at the top for the cover. Cover them with a brine made by adding to every 4 quarts of water used $\frac{1}{2}$ pint of vinegar and $\frac{3}{4}$ cup of salt. The amount of brine needed will be one-half of the volume of the material to be fermented. Place a wooden cover or glazed plate on top of the contents and press it down by weighting it with a stone or other weight, to keep the cucumbers under the brine. Fermentation will require from 8 to 10 days in

warm weather and from 2 to 4 weeks in cool weather. It is complete when bubbles cease to rise when the container is lightly tapped or jarred. When this stage is reached remove any scum which may have collected, pour hot paraffin over the cover and around the weight and store in a cool place.

Green Tomatoes

The process for green tomatoes is the same as that for cucumbers.

Beets and String Beans

Remove the strings from beans. Beets should be washed thoroughly and packed whole. Spices may be used, as with cucumbers, but these may be omitted if the vegetables are to be freshened by soaking, when they are to be used. The method is the same as with cucumbers.

PREPARING FOR USE

To prepare salted vegetables for use, soak in 3 or 4 times their volume of cold water to draw out excess salt. One or two changes of water will shorten this process. They should then be drained and rinsed well, put in cold water, brought slowly to a boil, and cooked until tender. They may then be prepared and served as fresh products are prepared and served.

Fermented vegetables should be rinsed in fresh water after removing from the container. To retain the acid flavor do not soak in water before cooking.

If cooked without soaking, fermented dandelions, spinach, kale and other greens will have flavor similar to that of the greens in their fresh state.

Fermented corn should be soaked several hours, with three or four changes of water. During the cooking also there should be one change of water. The corn may then be used in chowder, pudding, omelet, fritters or waffles.

Salted string beans should be soaked to remove the salt and then prepared and served as fresh beans are prepared and served. Fermented string beans may be cooked without soaking and served as the fresh beans are served. Young and tender string beans may be eaten raw.

PICKLING VEGETABLES

Pickling is an important branch of home preparedness for the winter months. Pickles have little food value, but they give a flavor to a meal which is liked by many. They should not be given to children.

In pickling, vegetables are usually soaked overnight in a brine made of 1 cup of salt and 1 quart of water. This brine removes the

water of the vegetable and so prevents weakening of the vinegar. In the morning the brine is drained off.

Alum should not be used to make the vegetables crisp, as it is harmful to the human body. A firm product is obtained if the vegetables are not cooked too long or at too high a temperature.

Spices, unless confined in a bag, give a dark color to the pickles.

Enameled, agate or porcelain-lined kettles should be used when cooking mixtures containing vinegar.

Pickles put in crocks should be well covered with vinegar to prevent molding.

Instructions for some of the most commonly used methods are given herewith.

Tomato Catsup

4 quarts ripe tomatoes, boil and strain.
Add 4 tablespoonfuls of salt.
2 cups of vinegar.
1 level teaspoonful each of cayenne pepper, cinnamon, cloves, allspice, mustard and black pepper.

Boil rapidly until thick. Pour into hot sterilized bottles. Put the corks in tightly and apply hot paraffin to the tops with a brush to make an airtight seal. All spices, except cayenne pepper, should be enclosed in cloth bag and removed when catsup is done.

Chili Sauce

2 dozen ripe tomatoes (dip in boiling water to peel).
6 peppers (3 to be hot).
3 onions.
 $\frac{2}{5}$ cup of corn syrup.
2 tablespoonfuls of salt.
1 teaspoonful each of cloves, nutmeg and allspice.
1 quart of vinegar.

Simmer 1 hour. Pour into sterilized jars or bottles and seal while hot.

Chow Chow

2 pints cucumbers. (1 pint to be small ones).
1 cauliflower soaked in salted water for one hour.
2 green peppers.
1 quart onions.

Chop the above in small pieces. Sprinkle 1 cup of salt over them and let stand all night. Drain well in the morning.

The sauce for Chow Chow is made as follows:

2 quarts vinegar.
 $\frac{1}{4}$ pound of mustard.
1 tablespoonful of turmeric.
 $\frac{4}{5}$ cup of corn syrup.
 $\frac{1}{2}$ cup of flour.

Make a paste of the mustard, turmeric, sugar, flour and a little vinegar. Stir this into the warm vinegar and boil until thick. Then add the vegetables and simmer for $\frac{1}{2}$ hour. Stir to prevent burning. Put in cans while hot.

Cold Tomato Relish

8 quarts firm, ripe tomatoes; scald, cold-dip and then chop in small pieces.

To the chopped tomato add:

2 cups chopped onion.
2 cups chopped celery.
2 cups corn syrup.
1 cup white mustard seed.
 $\frac{1}{2}$ cup salt.
4 chopped peppers.
1 teaspoonful ground meat.
1 teaspoonful black pepper.
4 teaspoonfuls cinnamon.
3 pints vinegar.

Mix all together and pack in sterilized jars.

Corn Relish

1 small cabbage.
1 large onion.
6 ears of corn.
2 tablespoonfuls of salt.
2 tablespoonfuls of flour.
 $1\frac{1}{2}$ cups of corn syrup.
2 hot peppers.
1 pint of vinegar.
 $1\frac{1}{2}$ tablespoonfuls of mustard.

Steam corn 30 minutes. Cut from the cob and add to the chopped cabbage, onion and peppers. Mix the flour, sugar, mustard and salt—add the vinegar. Add mixture to the vegetables and simmer 30 minutes. Pour into sterilized jars or bottles and seal while hot.

Cucumber Pickles

Soak in brine made of 1 cup of salt to 2 quarts of water for a day and night. Remove from brine, rinse in cold water and drain. Cover with vinegar, add 1 tablespoonful brown sugar, some stick cinnamon, and cloves to every quart of vinegar used; bring to a boil and pack in jars. For sweet pickles use 1 cup of sugar to 1 quart of vinegar.

Dill Pickles

To make dill pickles follow the directions for fermenting cucumbers, page 30, using alternate layers of dill leaves, whole mixed spices and cucumbers. The top layer should be of beet or grape leaves an inch thick.

Green Tomato Pickle

Take 4 quarts of green tomatoes, 4 small onions and 4 green peppers. Slice the tomatoes and onions thin. Sprinkle over them $\frac{1}{2}$ cup of salt and leave overnight in crock or enameled vessel. The next morning drain off the brine. Into a separate vessel put 1 quart of vinegar, 1 level tablespoonful each of black pepper, mustard seed, celery seed, cloves, allspice and cinnamon and 1 cup of corn syrup. Bring to a boil and then add the prepared tomatoes, onions and peppers. Let simmer for 20 minutes. Fill jars and seal while hot.

Green Tomato Pickle

Wash and slice tomatoes. Soak in a brine of $\frac{1}{4}$ cup of salt to 1 quart of water overnight. Drain well. Put in a crock and cover with vinegar to which have been added stick cinnamon and 1 cup of corn syrup for every quart of vinegar used. Once a day for a week pour off vinegar, heat to boiling and pour over tomatoes again. Cover top of crock with a cloth and put on cover. This cloth should be frequently washed.

Mustard Pickles

2 quarts of green tomatoes.
1 cauliflower.
2 quarts of green peppers.
2 quarts of onions.

Wash, cut in small pieces and cover with 1 quart of water and $\frac{1}{4}$ cup of salt. Let stand 1 hour, bring to the boiling point and

PROLONG THE SEASON

The season for home canning and drying does not end with summer or early autumn. Many things may be canned or dried in October and November. Among these are turnips, spinach, squash, pumpkin, carrots, parsnips, cabbage, celery, beets, late corn, kale, chard, salsify and tomatoes.

drain. Mix $\frac{1}{2}$ pound mustard, 1 cup of flour, 4 cups of corn syrup, and vinegar to make a thin paste. Add this paste to 2 quarts of vinegar and cook until thick, stir constantly to prevent burning. Add vegetables, boil 15 minutes and seal in jars.

Piccalilli

4 quarts of green tomatoes.
1 quart of onions.
1 hot red pepper.
2 cups of corn syrup.
 $\frac{1}{2}$ cup of salt.
 $1\frac{1}{2}$ ounces each of mustard seed, cloves and allspice.
2 cups of vinegar.

Simmer 1 hour. Put into a covered crock.

Pickled Onions

Peel, wash and put in brine, using 2 cups of salt to 2 quarts water. Let stand 2 days, pour off brine. Cover with fresh brine and let stand 2 days longer. Remove from brine wash and pack in jars, cover with hot vinegar to which whole cloves, cinnamon and allspice have been added.

Spiced Crab-Apples

Wash apples, stick 3 or 4 whole cloves in each one and cover with vinegar to which

have been added stick cinnamon and $1\frac{1}{2}$ cups corn syrup for every quart of vinegar used. Cook slowly at a low temperature until apples are heated through. These may be put in jar or stone crocks.

Sweet Pickled Peaches

Wipe peaches and stick 3 or 4 whole cloves in each one. Put in jars or crock and cover with hot vinegar, allowing $3\frac{1}{2}$ cups of corn syrup to each quart of vinegar used. Every morning for a week pour off the vinegar, heat to boiling and pour over peaches again. On the last day seal jars or cover crock well.

Table Relish

Chop:

4 quarts of cabbage.
2 quarts of tomatoes, 1 quart to be green.
6 large onions.
2 hot peppers.

Add:

2 ounces of white mustard seed.
1 ounce of celery seed.
 $\frac{1}{4}$ cup of salt.
6 cups of corn syrup.
2 quarts of vinegar.

Simmer 1 hour. Pour into sterilized jars or bottles and seal while hot.

This manual was prepared by the Commission's experts and is based on their own research and experience, supplemented by information procured from the United States Department of Agriculture, Agricultural Colleges, Experiment Stations, and other sources.

The National War Garden Commission, wishing to do all within its power to aid the War Industries Board in the very necessary economy in the use of paper, has limited the edition of this book and asks those who receive it in quantity to make the most careful distribution so that the book may reach the hands of none but those who will use it. **IF THE INDIVIDUAL RECIPIENT CAN NOT USE THIS BOOK IT IS URGED THAT IT BE HANDED TO SOME ONE WHO WILL USE IT.**

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UNITED STATES FOOD ADMINISTRATION

Mobile, Alabama.
September 6th, 1918

MR. P. S. RIDSDALE, Secretary,
National War Garden Commission,
WASHINGTON, D. C.

Dear Mr. Ridsdale:

I desire to tender my sincere thanks for the books which you have furnished for distribution and use among the war gardeners of Mobile, and as encouragement and assistance to others to take up this splendid work conducive not only to increased supply of food products, but to the health and happiness of those who wisely give Mother Earth the attention which just at this time she all the more richly deserves.

It is needless for me to assure you that the books have been extremely helpful. I consider them the most complete and serviceable ever produced; and excepting only the family Bible, the foundation of all ethics and morality as well as the common law, these books are of more vital importance to every householder, in fact, good citizens throughout the land, than most printed matter obtainable.

Your books on canning and drying are likewise of inestimable value, and your splendid co-operation in the common cause of increasing and conserving the food supply in our present crisis meets with the heartiest appreciation.

Very sincerely,
(Signed) HENRY A. FORCHHEIMER,
Federal Food Administration Board.

UNITED STATES FOOD ADMINISTRATION

Davenport, Iowa.
September 5, 1918.

MR. P. S. RIDSDALE, Secretary,
National War Garden Commission,
WASHINGTON, D. C.

My dear Mr. Ridsdale:

We have found your publications of great value in our work in this State and it gives me pleasure to thank you for your prompt and cordial compliance with all of our requests.

Your book on War Vegetable Gardening and the one devoted to Canning and Drying are filled with information of great value to the gardener and housewife.

It has been a source of great satisfaction to us to be able to distribute your books in every County in Iowa and we have used care to place them in the hands of people who need them and who are constantly calling for just the information contained in them.

We feel that your co-operation has been of great importance.

Faithfully yours,
(Signed) M. L. PARKER,
State Merchant Representative,
Iowa Food Administration.



After J. N. Darling, in New York Tribune.

NATIONAL WAR GARDEN COMMISSION

A Patriotic Organization Affiliated with the Conservation Department
of the American Forestry Association

WASHINGTON, D. C.

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